



DEVELOPMENT COMMITTEE
(Joint Ministerial Committee
of the
Boards of Governors of the Bank and the Fund
on the
Transfer of Real Resources to Developing Countries)



DC2020-0002
March 25, 2020

**Progress Report on Mainstreaming Disaster Risk Management in World Bank
Group Operations**

Attached is the document titled “Progress Report on Mainstreaming Disaster Risk Management in World Bank Group Operations” prepared by the World Bank Group and International Monetary Fund for the virtual April 17, 2020 Development Committee Meeting.

**PROGRESS REPORT ON
MAINSTREAMING DISASTER RISK MANAGEMENT IN
WORLD BANK GROUP OPERATIONS**

March 19, 2020

Table of Contents

Executive Summary.....	5
A. Introduction	6
B. A large and stable operational portfolio, covering almost all Global Practices.....	7
C. Scaling up in priority areas.....	13
C.1 Mainstreaming of resilience within infrastructure planning and investments and for urban development.....	13
C.2 Expanding the range of instruments that countries can use to strengthen preparedness and recovery	15
C.3 Scaling Solutions for Disaster Risk Financing	17
D. Challenges, new priorities, and emerging opportunities.....	18
D.1. Strengthening the analysis of DRM and Macro-fiscal issues.....	19
D.2 New tools and methodologies leverage the latest technology and data to help guide projects	19
D.3. Expanding the role of the private sector	21
D.4 DRM/FCV nexus and crisis work	22
D.5 Methodologies for Measuring DRM Going Forward	23
E. Conclusion.....	24

List of Acronyms and Abbreviations

AFR	Africa Region
Cat DDO	Catastrophe Deferred Draw-down Option
CDRF	Crisis and Disaster Risk Finance
CERCs	Contingent Emergency Response Components
CPF	Country Partnership Framework
CRP	The City Resilience Program
CRW	Crisis Response Window
DLI	Disbursement-linked indicators
DRM	Disaster Risk Management
EAP	Eastern Asia and the Pacific
ECA	Europe and Central Asia
EFI	Equitable Growth, Finance and Institutions
FAM	The Famine Action Mechanism
FCI	Finance, Competitiveness and Innovation (GP)
FCV	Fragile, Conflict and Violence
FY	Fiscal year in the WBG. Extends from July 1 st to June 30 th
GCRP	The Global Crisis Response Platform
GFDRR	The Global Facility for Disaster Reduction and Recovery
GIIF	The Global Index Insurance Facility
GP	Global Practice
GPURL	Global Practice on Urban, Disaster Risk Management, Resilience and Land
GRADE	Global Rapid Post-Disaster Damage Estimation
GRiF	The Global Risk Financing Facility
IBRD	International Bank for Reconstruction and Development
ICTs	Information and Communication Technologies
IDA	International Development Association
IEG	The Impact Evaluation Group
IFC	The International Finance Corporation
IPCC	Intergovernmental Panel on Climate Change
IPF	Investment Project Financing
LAC	Latin-America and the Caribbean
MDTF	Multi-Donor Trust Fund

MENA	Middle-East and North-Africa
MIGA	Multilateral Investment Guarantee Agency
MFD	Mobilizing Finance for Development
MTI	Macroeconomics, Trade and Investment (GP)
OPCS:	Operations Policy and Country Services
PDNA	Post-Disaster Needs Assessment
PforR	Program for Results
PG	Practice Group
SAR	South Asia Region
SCD	Systemic Country Diagnostic
SDGs	The Sustainable Development Goals
SIDS	Small Island Developing States
SURR	Social Urban Rural and Resilience Global Practice of the World Bank
WBG	World Bank Group (comprises the IBRD, MIGA, IFC and ICSID)

Progress Report on Mainstreaming Disaster Risk Management in World Bank Group Operations

Executive Summary

This report presents an update of the World Bank Group's (WBG) progress in Mainstreaming Disaster Risk Management (DRM) in its operations over the last two fiscal years (FY18 and FY19). It follows a previous report presented to the Development Committee in April of 2018. It focuses on three main areas of the WBG's DRM program: (i) a summary of the portfolio of DRM lending, based on a simple methodology for tracking DRM components in lending operations; (ii) progress made in scaling up priority areas; and (iii) a summary of current challenges, new priorities, and emerging opportunities. The WBG's progress in building a portfolio of operational and analytical work in the core areas of DRM institutions, policies, and investments has been complimented by efforts to mainstream DRM considerations across country portfolios into operational and analytical efforts in a variety of sectors,

The volume of commitments, as indicated by the current methodology, has remained steady at around 10% of WBG overall financing commitments. The share of DRM investment remains at a similar level as in the previous report, reflecting a steady state of client demand. At the same time, the share of DRM investments continues to spread broadly across sectors, with new activities and growth in the agenda in Health, Nutrition & Population, Macroeconomics, Trade and Investment and Agriculture Global Practices (GPs).

Since the last report, significant progress has been made in three areas that are recognized as central to the agenda: expanding the range of DRM instruments, disaster risk financing, and investing in resilient infrastructure, including through efforts to mainstream DRM into sectoral engagements at the country level. During this reporting period, there was an uptake in the use of more flexible instruments to improve clients' ability to both prepare for and respond to disasters, including an expansion in the use of the Catastrophe Deferred Draw-down Option (Cat DDO) instrument, innovative Program for Results (PforR) approaches, and the use of Contingent Emergency Response Components (CERCs) in Bank operations. An increase in client demand and dedicated donor support for pre-arranged financial protection solutions is providing help to clients who want to design and implement pre-arranged disaster risk financing solutions. The last two fiscal years have also seen a scale-up of investments and analytical work related to resilient infrastructure, an area that had been previously identified as a promising avenue for mainstreaming DRM. Its emphasis was reinforced through endorsement of the six Principles for Quality Infrastructure Investment by the G20 under Japan's presidency in 2019; one of the six principles calls for building resilience against natural disasters and other risks.

As the scope and scale of disasters continues to affect client countries, there are new challenges and opportunities associated with efforts to mainstream DRM into operations. This includes developing new tools to internally measure and track the complexity of DRM commitments, being more agile in responding to disasters, and being prepared to address the complex situation of compounding crises, particularly in FCV contexts. Work is currently underway to build in better accounting for disaster risk in macroeconomic models, economic and fiscal planning, debt management, and broader policy reform. New tools and technologies are increasingly being used to both inform operations and structure solutions, including in terms of collection of actionable risk data and guidance for gender-sensitive and inclusive approaches to DRM, but more work is needed, especially in the context of more widespread or extreme events, and complex threats. Private-sector capabilities need to move beyond a focus on the roles of tech firms and insurance companies, to include the broader perspectives of firms and supply chain actors.

A. Introduction

Hurricanes, earthquakes, wildfires and floods cost the world US\$160 billion in 2018 and US\$150 billion in 2019, according to Munich Re. Compared to the last 30 years, losses from both years were above the inflation-adjusted overall loss average of US\$140 billion. Fiscal years 2018 and 2019 (FY18/FY19) were marked by a large number of disasters across the world, including the earthquakes in Mexico, the eruption of the Fuego volcano in Guatemala, and the triple shock of an earthquake and a resulting tsunami and landslides in Sulawesi, Indonesia. The 2019 Indian Ocean cyclone season was the most active on record and caused massive destruction in East Africa and South Asia. Mozambique was affected twice by Cyclone Idai and Cyclone Kenneth, with almost 700 lives lost and damages close to a billion dollars. In Bangladesh and the Indian state of Odisha, 2.8 million people were evacuated ahead of Cyclone Fani. Other disasters included droughts across the Africa continent, and several record-breaking hurricanes and cyclones in the Caribbean and Pacific islands. Myanmar, Papua New Guinea, Lao PDR, and the Philippines also experienced severe disaster shocks. In the Middle East and North Africa region, weather extremes such as torrential rains and floods, affected tens of thousands—with many events occurring in the context of fragility arising from conflict, such as in Libya, Syria, and Yemen. The Intergovernmental Panel on Climate Change (IPCC) reports document that climate change and environmental degradation are forces that will likely increase the rate and scale of disasters in the future¹.

A recent report from the Global Facility for Disaster Reduction and Recovery (GFDRR)² shows the world has made significant progress in mainstreaming DRM over the last 10 years, with governments in most countries now acknowledging the value of ex-ante DRM actions and investing in policy reform, improved analytics, and development of strategies. In many countries, investments are also being made to reduce the underlying causes of disasters. However, current investments are only a fraction of what would be required to manage natural risks properly. For example, in Turkey, assessments show that 4,275 public schools, located in high risk zones, are highly vulnerable. A new IBRD investment will retrofit 350 of the most vulnerable schools but this is far from enough considering that there are also an unknown number of preschools, daycares, dormitories, tertiary schools that need upgrading. A similar situation can be found in many countries.

To help countries address resilience challenges, several thematic areas of engagement have been scaled up, spanning across the operational framework that is used to guide DRM action. Aligned with the Sendai Framework for Disaster Risk Reduction, the DRM framework is organized around five major pillars: risk identification, risk reduction, risk preparedness, financial protection, and resilient reconstruction. The Global Facility for Disaster Reduction and Recovery³ provides grants for technical assistance to countries in all five of these areas. While earlier phases of the WBG's DRM work focused heavily on scaling up activities related to risk identification and disaster recovery, in FY18/FY19, activities that gained traction

¹ <https://www.ipcc.ch/2019/08/08/>

² <https://www.gfdrr.org/en/publication/10-decade-progress-disaster-risk-management>

³ The Global Facility for Disaster Reduction and Recovery is a multi-donor trust fund administered by the World Bank, which provides grants to support DRM projects worldwide. In FY19, GFDRR's active grant portfolio was US\$268 million, covering 142 countries.

include pre-arranged financial protection (also known as disaster risk financing) and a focus on resilient infrastructure.

B. A large and stable operational portfolio, covering almost all Global Practices

DRM continues to be a critical component of the World Bank Group’s efforts to achieve its twin goals, and momentum is increasing as a result of more global attention on the need for action that builds resilience. In FY18/FY19, the WBG played an important role in helping countries institutionalize DRM as a national priority and put in place mechanisms needed to build resilience, mitigate risk, and improve preparedness to respond to natural disasters. This was achieved by using an integrated approach to DRM, including advisory services, partnerships with bilateral and multilateral organizations, technical assistance that builds capacity and supports knowledge creation, and investments in resilience supported by operational tools that can prompt necessary reforms. While the numbers in this report focus primarily on lending operations, it is important to keep in mind that the influence and impact that the WBG achieves through its full array of tools and partnerships goes well beyond the impact of projects, supporting policy shifts that can reduce risk across an economy. Since the last progress report on DRM, we have seen significant growth in the importance of DRM – and resilience, more broadly – reflected in Systemic Country Diagnostics (SCDs) and Country Partnership Frameworks (CPFs), the foundational analytic and strategic documents for our client engagement. In addition, resilience and DRM have been included as core elements of regional and sectoral strategies and this has helped better position the WBG to supplement its lending and policy work with capacity building and technical assistance to support knowledge and access to risk data to make better informed decisions. Sound macro-fiscal development is supported by considering vulnerability to shocks as part of macroeconomic frameworks. Changes in building codes and investments in resilient infrastructure are supported by operational instruments that can prompt a change in incentives and reducing overall risks. Finally, partnerships with bilateral and multilateral organizations support a coherent approach to connecting urgent needs with financing and helping to facilitate interventions that require actions across the humanitarian-development nexus.

Box 1. The WBG support to governments in enhancing DRM focuses on 5 pillars and includes:

- **Risk identification by improving access to and use of risk data and analytics:** conducting risk assessments and detail design of risk reduction solutions for various hazards; development and use of new technologies that support DRM such as collection of high resolution imagery, use of drone imagery to support better planning and environmental management, and open source community-based creation of hazard and exposure maps.
- **Risk reduction by financing investments in resilient infrastructure:** Improvements in urban infrastructure (particularly stormwater drainage); investments in solid waste management that reduce flood and public health risks; use of nature based solutions, such as ecosystem restoration and management to mitigate disaster risk; and investments in community infrastructure and services such as water supply and sanitation facilities, roads, and health and education facilities.

-
-
- **Risk preparedness by increasing capacity for disaster response and access to early warning:** building capacity and strengthening institutions to properly operate and maintain early warning systems; upgrading infrastructure to modernize and operate information systems needed to collect data and develop forecasts, particularly for hydro-meteorological hazards (flood and drought); improving service delivery to offer timely and reliable early warnings to users and communities.
 - **Financial protection by offering disaster risk financing solutions to countries from local to national scale:** supporting the establishment of National Emergency Funds to access financing quickly after a disaster; providing instruments to build comprehensive financial packages (including reserves, risk transfer, and contingent financing instruments) to improve financial resilience to disaster shocks; helping countries design adaptive social protection systems to protect vulnerable populations.
 - **Resilient reconstruction by supporting post-disaster assessments and financing reconstruction programs:** supporting governments in understanding post-disaster damages and losses using innovative rapid-assessment tools, as well as traditional post-disaster needs assessments; financing recovery programs including reconstruction of housing, infrastructure and the public sector, and building back better through safer school projects and resilience building investments.
-
-

Table 1 below shows the volume of investments that have been tagged by OPCS as having a direct contribution to DRM, i.e. DRM commitments, averaged across a two-year period. The tagging of commitments is done by reviewing operations to assess the percentage that can be attributed as a DRM commitment, which in a given operation can range between 0% and 100%. For the FY18/FY19 period, the average volume of annual DRM commitments was US\$5 billion, and this was 10.6% of total annual WBG lending.

Table 1 - IBRD, IDA and TF DRM commitments by Global Practices (GPs), in US\$ millions per year, averaged ⁴

Global Practices	FY12/FY13			FY14/FY15			FY16/FY17			FY18/FY19		
	IBRD	IDA	TF	IBRD	IDA	TF	IBRD	IDA	TF	IBRD	IDA	TF
Agriculture	116	115	42	379	331	13	1	275	0	373	75	9
Education	0	22	0	0	0	0	0	32	5	0	60	0
Energy & Extractives	10	303	0	0	166	0	54	24	20	0	27	0
Environment & Natural Resources	61	256	97	40	78	68	138	250	10	25	172	17
Finance, Competitiveness and Innovation, Trade & Competitiveness	2	1	0	68	53	0	0	33	26	89	10	0
Governance	44	0	0	2	0	0	0	0	0	12	1	0
Health, Nutrition & Population	15	43	0	0	0	0	0	39	0	34	215	13
Macroeconomics, Trade and Investment	157	27	0	424	44	0	43	7	0	231	46	0
Poverty and Equity	50	0	0	0	0	0	0	0	0	0	0	0
Social Protection & Labor	0	150	0	0	349	0	224	285	2	2	439	1
Social, Urban, Rural and Resilience Global Practice	876	522	28	656	1669	32	761	907	3	832	1003	59
Transport & Digital Development	11	154	11	97	107	0	101	404	34	349	204	1
Water	224	364	13	283	516	17	815	306	37	312	350	2
SUB-TOTAL	1566	1959	193	1949	3313	131	2138	2562	138	2259	2603	102
Total (per year)	3718			5393			4839			4964		
DRM share	10.7%			12.3%			10.7%			10.6%		

The share of DRM commitments has been stable over the last seven years, with fluctuations due to changes in total lending volumes, as well as variability in reconstruction support linked to the occurrence of major disasters. The data captured by OPCS to measure DRM commitments is currently the only consistent and Bank-wide information on DRM mainstreaming. It represents a conservative estimate since the methodology for tracking these investments evaluates investments that *directly* contribute to DRM. It does not include operations, such as water management projects, which contribute *indirectly* to DRM, for example by mitigating or managing impacts of weather variability. In addition, a preliminary review of the data at the project level shows that in some cases the methodology does not capture non-traditional or cross-sectoral DRM operations, in a few cases it fails to capture more traditional DRM activities, and in several others, it seems to overestimate the DRM commitments. Challenges with the current methodology are addressed in more detail in the last section of this report.

While DRM commitments have been stable, mainstreaming of the theme has broadened as Global Practices (GPs) are incorporating DRM into projects in new ways. In the FY18/FY19 portfolio, most GPs have projects that include investments in DRM. Key practices continue to dominate in DRM, in particular the Social, Urban, Rural, and Resilience Practice (SURR) ⁵ which supported 38% of total commitments in

⁴ These numbers do not cover Bank Executed projects TFs, Reimbursable Advisory Services (RAS) or Recipient Executed TFs that partially funded an IBRD/IDA investment.

⁵ The SURR GP was split into Global Practices in July 2019: The Social Global Practice and the Global Practice for Urban, Resilience, and Land; the data available for this report, however, was not disaggregated into these two GPs and retains the previous heading as SURR.

DRM in FY18/FY19, consistent with levels of previous years. Compared to FY16/FY17, the share of DRM investments in the total GP portfolio increased in the Health, Nutrition & Population; Macroeconomics, Trade and Investment; and Agriculture GPs. During this period the share of DRM investments in Social Protection & Jobs and Transport & Digital Development stayed stable compared to FY16/FY17.

Sustainable Development Practice Group

The Sustainable Development Practice Group continues to be the leader in DRM lending, through targeted DRM investments and projects that mainstream DRM actions across the environment, urban, water, agriculture and social sectors. The SURR GP's portfolio increased by 13% from FY16/FY17 to FY18/FY19. SURR GP's targeted operations in DRM include investments to support preparedness activities, deepen financial protection, finance longer term disaster resilience and respond to emergencies. The Agriculture GP has had the largest growth, more than doubling the DRM portfolio since FY16/FY17. Although allocated across a small number of projects in the Agriculture GP, investments in irrigation and agricultural risk financing drove the increase in DRM commitments. Examples include an irrigated agriculture project (P163742) in Sri Lanka, or the Integrated Risk Management in the Rural Agro-industrial System Project (P162316) in Argentina. In the Environment GP, DRM commitments can be found in investments to protect and strengthen resilience in natural resources such as coastal areas, landscapes and forests. Launched in 2018, the West Africa's Coastal Areas (WACA) program supports DRM by helping countries access expertise and finance to sustainably manage coastal areas and reduce the impacts of erosion and flooding. A significant opportunity recognized in this period was the ability to harness natural systems to reduce the impact of disasters. A project currently under preparation in Rwanda (P165017), for example, is taking an integrated approach to flood risk management in Kigali which includes wetlands rehabilitation and green/grey infrastructure investments to mitigate erosion, manage stormwater run-off and reduce flood risk in hotspot areas. The Water GP looks at disaster risks primarily from a watershed perspective, and finances projects that include both infrastructure and management services. Grey water infrastructure, such as multipurpose reservoirs, flood control structures, and regional water supply networks, combined with green infrastructure such as floodplains and wetlands, help to reduce disaster risks for urban and rural areas while also protecting other critical infrastructure. For example, the flood management project in Manila (P153814) incorporates drainage infrastructure, solid waste management, and community participatory planning to relocate populations in extremely high-risk areas. Investments in water resource management, such as information systems and institutions, help water agencies respond to disasters. The Water GP is also mainstreaming resilience into water supply, sanitation, and irrigation projects by helping to ensure continuity of these essential services during natural disasters and conflicts, as well as extreme climate events.

Infrastructure Practice Group

The Infrastructure Practice Group is an important contributor to mainstreaming resilience with a large and relatively stable share of total DRM commitments, driven largely by the Transport Global Practice. DRM commitments in transport has remained above US\$500 million a year on average for the two most recent reporting periods, up from US\$204 million during the FY14/FY15 period. The geographic scope of projects varied between FY18 and FY19. In FY18, the number of projects was relatively balanced between ECA, SAR, LAC and EAP, but in FY19 the portfolio of approved projects with DRM commitments was largely directed toward Small Island Developing States (SIDS), which had seven out of 10 projects. The demand for investment in resilient transport solutions for SIDS was also strongly reflected in GFDRR's FY19 portfolio which included grants for strengthening the resilience of transport asset management systems (in Cabo Verde, Saint Vincent, the Solomon Islands, and Vanuatu). In FY18/FY19, the Energy and Extractives Global Practice had lower DRM commitments in terms of US\$ size of investments, but a stable number of projects with DRM components, around an average of five projects per year. Recent experience

of the cyclones in Mozambique in 2019, hurricanes in the Caribbean in 2017, and extreme temperature and precipitation in Bangladesh and India indicate that there continues to be a need for increasing the focus on resilient energy solutions and systems. In the Caribbean islands, an in-depth diagnostic on the resilience of power systems in the region is being undertaken with plans to prepare an investment plan. The Infrastructure group, often in collaboration with the World Bank Tokyo DRM Hub, has also produced several technical briefs and guidance notes on how to plan and deliver on Resilient Infrastructure. The Tokyo DRM Hub works closely with the Quality Infrastructure Investment (QII) Partnership team to operationalize the G20 Principles for Quality Infrastructure Investment endorsed under Japan's presidency.

Equitable Growth, Finance and Institutions Practice Group

The Equitable Growth, Finance and Institutions (EFI) group scaled up DRM commitments in FY18/FY19 with a significant portion of operations led by FCI (focusing on financial protection) and an increasing number led by MTI (focusing on the macroeconomic impacts of disaster shocks). In FY18/FY19 EFI's DRM commitments increased by 6% compared to the reporting period FY16/FY17, reaching about US\$280 million a year. In recent years, operations including DRM components have shifted focus from post-disaster budget support toward helping countries work pre-emptively to close the financing gap that can be caused by unbudgeted expenditures and disaster-related revenue loss. In FY14, examples of post-disaster budget support projects include the Post Typhoon Recovery Loan (P148862) to the Philippines and the post-Cyclone Evan recovery support in the Samoa DPO (P144377), which were main drivers of the peak in MTI DRM commitments in that reporting period. In FY18/FY19, projects with DRM components focused on macro and fiscal management in the Philippines (P167651), on expanding insurance coverage in Indonesia (P167297), and on financial inclusion in Mexico (P167674). The most recent reporting period was also characterized by growing recognition that the relationship between natural disasters and macroeconomic stability is particularly acute in the case in small island states and small economies. As an example, Jamaica is highly exposed to natural hazards which pose a significant threat to Jamaica's macroeconomic outlook⁶. Average annual losses from hurricanes to build infrastructure are likely to amount to US\$67 million and disasters continue to increase Jamaica's sovereign debt level. In FY18/FY19, FCI scaled up its contributions to DRM by supporting multiple disaster risk finance components in lending operations led by other GPs (including GPURL, SPL, MTI). The Global Risk Financing Facility (GRiF) program, jointly managed by FCI and GFDRR, was established in 2018 and will provide co-financing to countries interested in investing in pre-arranged financial solutions. Finally, in the Governance GP, for the first time, DRM experts are working in collaboration with experts on public financial management, particularly in the Caribbean.

Human Development Practice Group

Over the last two fiscal years, mainstreaming DRM increased in Human Development, with the Practice Group seeing a 30% increase in DRM commitments from the previous reporting period. Much of the overall increase is a result of the increase in DRM commitments in the Health, Nutrition and Population GP, which reached US\$262 million in FY18/FY19 compared to only US\$39 million in FY16/FY17. A large part of the WBG's increase in DRM commitments in the health sector has been activities relating to improving resiliency and preparedness in health systems following devastating disasters or ongoing emergencies. Examples include a hospital resiliency and preparedness project in Sint Maarten (P167532) following the devastating Hurricane Irma, and the emergency health and nutrition program in Yemen (P167195) which responded to multiple disease outbreak in the context of the conflict. DRM activities

⁶ International Monetary Fund, "2014 Article IV Consultation Fourth Review Under the Extended Fund Facility and Request for Modification of Performance Criteria," IMF Country Report no. 14/169, June 2014.

within the Health, Nutrition and Population GP are typically structured around: (i) strengthening health systems capacity to respond to disasters by incorporating emergency response into national health plans and improving emergency surveillance and response; (ii) strengthening pandemic responses, especially in fragile and conflict settings and disasters such as the support to Yemen's childhood immunizable cluster and cholera outbreaks; and (iii) strengthening emergency primary health care services in ongoing conflict contexts, including recent support to Bangladesh (Rohingya), Lebanon and Yemen. The IDA Regional Window has been an important vehicle for supporting disease surveillance and under IDA19, the Regional Window can support single-country operations with a strong focus on prevention of and preparedness for both natural disasters and pandemics, where they might address cross-border spillovers. Looking forward, recent outbreaks such as the Coronavirus have demonstrated the value of having DRM investments in place to support preparedness more broadly. Recent developments such as allowing Cat DDOs to be drawn down for health-related emergencies is helping to strengthen this process with care being taken to ensure that these operations support a program that involves strengthening preparedness policies and institutional frameworks across a wide range of sectors. In FY18/FY19, the Education GP doubled its share of DRM commitments. A significant contributor to this increase was an Africa regional scholarship project (P165581) focused on building greater scientific and technical capacity in sub-Saharan Africa which includes a focus on disaster risk reduction. Additionally, the Safer Schools initiative continues to grow and in FY18/FY19 an average of 45 countries participated in this program. This has resulted in almost 800,000 classrooms made safer from disasters and over 22 million expected student beneficiaries. In the Social Protection and Jobs GP, the WBG continues to expand its portfolio in disaster responsive and adaptive safety net systems that increase the resilience of poor and vulnerable households. A large number of investments support preparedness and greater flexibility and scalability of safety net programs, as these can be an efficient mechanism to transfer resources to disaster-affected people. As an example, in the Sahel Adaptive Social Protection Program (SASPP), countries are using climate-sensitive cash transfers, productive inclusion programs and accompanying measures to help build the resilience of poor households to recurrent disasters, food insecurity and climate change. In Mauritania, collaboration between the SP and DRM team has supported the expansion of the social registry to include households that are identified as being especially vulnerable to climate shocks and food insecurity, as well as a predictive model to enhance a timelier response to food insecurity.

International Finance Corporation

All WBG projects are now screened for disaster and climate risks, including at IFC, where DRM has been incorporated into the IFC Performance Standards and climate risk screening tools have been developed for the sectors that are most exposed to natural hazards. DRM is considered integral to supporting sustainability and resilience. Solutions for clients to manage disaster risk include the Global Index Insurance Facility (GIIF), which has provided over 6.1 million individuals with weather index-based crop insurance coverage, including farmers in Bangladesh, Rwanda, and Kenya. In the emergency project supporting recovery from Cyclone Idai and Kenneth in Mozambique (P171040) a first ever private sector recovery component is included, which the IFC is providing advisory support for a matching grant and credit facility that can help improve access to finance for businesses struggling to cope with immense disaster impacts. In FY19, grants provided by GFDRR through the World Bank Tokyo DRM Hub began exploring how to incorporate DRM and resilience issues into a private investment and digital entrepreneurship project in Bangladesh. This project is exploring, for the first time, how attention to DRM issues can play a role in enhancing competitiveness and the design of economic zones.

Post Disaster Response and Recovery

Rapid and effective recovery remains a key component of WBG DRM activities, and advances in analytics are improving both the quality, speed, and cost-efficiency of post disaster needs assessments.

In FY18/FY19, the WBG supported client country efforts to respond to more than 45 disasters and better prepare for future events with US\$6.5 million in GFDRR financing assisted these efforts through support to just-in-time activities, other grants, and 21 Post-Disaster Needs Assessments (PDNAs) across five regions. With more information and better models now available, the Global Rapid Post-Disaster Damage Estimation (GRADE) methodology has been developed and is delivering damage estimates and assessments more quickly and at a lower cost than traditional PDNAs. As an example, following the Sulawesi earthquake and tsunami in 2018, a rapid damage assessment was completed in just under ten days, using satellite and ground collected data, remote sensing imagery, social media data and analytical modelling techniques. The assessment allowed for rapid estimation of economic damage and losses across several sectors to quickly inform and prioritize the response strategy. In FY18/FY19, 11 GRADE assessments were completed. Additional detail on the GRADE approach can be found in section D.2. below.

C. [Scaling up in priority areas](#)

The previous report on mainstreaming of DRM in World Bank Group operations, published in April 2018, identified a number of priorities for action. These included increased focus on resilient infrastructure and urban development; developing new instruments for more flexible support; leveraging resources and mobilizing private capital for resilience, including through insurance; and improving the effectiveness of working in fragile and conflict environments. Over the past two years, particular progress was made on mainstreaming resilience in infrastructure planning, investments, and urban development; expanding the range of instruments that countries can use to strengthen preparedness and recovery; and scaling solutions for disaster risk financing. The following section of the report summarizes main highlights of each.

C.1 [Mainstreaming of resilience within infrastructure planning and investments and for urban development](#)

Infrastructure that is resilient to disasters is increasingly recognized as key for people’s well-being and firm productivity and in FY19, the “Lifelines” flagship publication presented new findings about the value of this investment. With financing from GFDRR and the Japan-World Bank Program for Mainstreaming Disaster Risk Management in Developing Countries, this flagship report “Lifelines: The Resilient Infrastructure Opportunity,” examined the resilience of four essential infrastructure systems: power, water and sanitation, transport, and telecommunications. Through economic analysis and a collection of global case studies, the report defined how these systems provide critical services for the well-being of households and the productivity of firms. For example, in the immediate aftermath of disasters, timely and effective information is critical for the decision-making process. Information and Communication Technologies (ICTs) play a significant role in mitigation, preparedness, response, and rehabilitation by facilitating the flow of vital information in a timely manner. The Lifelines Report made the case that more resilient infrastructure systems not only avoids costly damage, but also minimizes the wide-ranging consequences of natural disasters for the livelihoods and well-being of people. A key message from the Lifelines report is that investing in more resilient infrastructure is robust, profitable, and urgent; with US\$4 in benefit for each US\$1 invested.

Recent progress in mapping transportation networks, including semi-formal urban transit, and in the geo-location of jobs, people and important infrastructure, such as health centers, are providing an opportunity to understand the impacts of disasters on the ability to reach key destinations. As argued

in the *Lifelines* report, beyond the destruction of infrastructure, disasters have large costs for firms and households because they disrupt the functioning of the economy. People are unable to get to work, schools, or hospitals, and key supplies are cut off from firms that depend on consumers and suppliers to maintain commercial operations. Until recently, it was difficult to explore how disasters impacted these flows, but a series of technological advances are now helping experts overcome this data scarcity. Local communities can now relatively easily indicate the existence of a road and its condition, on platform called OpenStreetMap, and indicate the location of service infrastructure such as health centers. Local initiatives are now able to map semi-formal transit system itineraries and travel times, including in flooded conditions and present that data in a standard format. Critically, the location of jobs can also be proxied from anonymized cell phone data after processing or from characteristics of the built-up area. These data, combined with progress in network analyses, is creating the foundation for the scientific community, policy-makers, experts, and communities around the world to be able to assess more specifically the cost of loss of connectivity. This can in turn provide information about how to make difficult investment choices, for example for upgrading vulnerable segments of road or deciding where to place a health center or school.

Investments in urban resilience have been significantly scaled up over the last two years; however, continued momentum in this area is key to sustainable development and poverty reduction in urban areas. With three million people moving into cities every week and urban areas projected to have an additional 2.5 billion residents by 2050, rapid urbanization is transforming the planet. In the last two years, the WBG's urban portfolio has increasingly been integrating concepts of resilience. The City Resilience Program (CRP), which is supported by GFDRR, has engaged with more than 90 cities around the world, helping them to pursue comprehensive investment programs to strengthen resilience and supporting the process of exploring a broad range of financing options. In Accra for example, the CityStrength Diagnostic was used to improve understanding of the many shocks and stresses confronting the city and then identify priority actions and investment. The results informed the design of a US\$200 million IDA financed project (P164330) to strengthen urban resilience through flood risk reduction, solid waste management and improving access to basic infrastructure and services. Similar investments that build urban resilience through infrastructure, policy and institutional and capacity building are not only being replicated across many large cities across the globe – such as in Kinshasa (P161602), Manila (P153814), and La Paz (P165861) – but are also extending to a growing number of secondary and peripheral cities. With built-up urban land cover forecast to increase by more than three times by 2030 (with projections of a seven-fold increase in just Africa), it will be critical to continue investments aimed at strengthening disaster resilience. The Impact Evaluation Group (IEG) carried out an evaluation of the WBG's experience in building urban resilience over the 2007-2017 period in 2019⁷, noting the progressive mainstreaming of the topic into operations but also pointing to opportunities for improvement through a set of recommendations. These recommendations encourage the WBG, among others, to i) systematically track progress in building urban resilience, ii) systematically incorporate resilience characteristics in projects over the full lifecycle, and iii) better articulate projects in a given city so that they collectively build resilience.

Finally, the WBG is responding to increased demand from client countries for financial protection of infrastructure and public assets. In middle income countries, demand is increasing for protection of infrastructure and public assets, which are often large contributors to the increases in public debt that countries take on following major disasters. In Indonesia, FCI is supporting the implementation of a Public Assets Indemnity Insurance Program which hopes to cover 1,360 Ministry of Finance buildings across Indonesia, with total sums of approximately US\$780 million insured. In the Philippines, a Public Assets

⁷ <https://ieg.worldbankgroup.org/evaluations/urban-resilience>

Indemnity insurance program is being set up in the Bureau of the Treasury to assist in development of a comprehensive public asset registry, and procurement of the insurance and reinsurance cover for assets owned by the Departments of Education and Transport.

C.2 Expanding the range of instruments that countries can use to strengthen preparedness and recovery

The WBG continues to innovate and broaden the use of financing instruments and services to better respond to the wide range of DRM needs across client countries. While Investment Project Financing (IPF) continues to be the primary lending instrument for strengthening DRM, Development Policy Financing (DPF), Program for Results (PforR) and Reimbursable Advisory Services (RAS) are increasingly being used as well. In Mozambique, the first dedicated DRM and Resilience PforR in an IDA country was approved in March 2019. It supports the country's DRM reform agenda by incentivizing progress under priority areas of the National Disaster Risk Reduction Master Plan 2017-2030. It included the operationalization and recurrent capitalization of a recently created Disaster Management Fund and purchase of sovereign catastrophe risk insurance to improve the country's financial protection against disaster. Disbursement-linked indicators (DLI) are also used to strengthen capacity, systems, and procedures for disaster preparedness and response, and support resilient retrofitting/rehabilitation of vulnerable education infrastructure. The WB is also increasingly using the Reimbursable Advisory Services (RAS) instrument to provide advisory services on DRM. For example, in Bulgaria (P170629) a RAS engagement is helping the Government increase efficiency of the national DRM system through preparation of a DRM diagnostic and roadmap, development of a data collection system for damage and losses, and support to develop a national disaster risk profile and management plan. In South Africa, an RAS is providing technical support to help integrate resilience strategies within city plans and ensure investments in infrastructure and service delivery consider climate and disaster risks. Across the range of situations, Bank teams have deployed the spectrum of DRM instruments – whether standalone IPFs prepared under regular or emergency procedures, PforRs, Cat DDOs, or CERCs in IPF – to address client needs in an agile manner, and instruments like the Cat DDO and CERCs have proven especially relevant in quickly providing resources when disasters strike.

The demand for DPFs with Catastrophe Deferred Drawdown Options (Cat DDOs) continues to increase. Since inception in 2009 and as of the end of FY19⁸, a total of 18 Cat DDOs have been approved, of which 13 have been triggered and disbursed. Seven of the Cat DDOs were approved in this reporting period, including the first in IDA countries, in Kenya, Malawi, and Cabo Verde. The incentive for the IDA Cat DDOs, which allows for 50% of the amount requested to be funded by the country's concessional core IDA allocation, with the balance financed by IDA's overall resources, has increased demand for the instrument. Additionally, the instrument has a recognized value in supporting country's efforts to undertake policy reform, strengthen institutional frameworks, but also arrange access to financing that can be drawn down quickly following a disaster. Cat DDO programs have played an important role in strengthening disaster preparedness as well as fostering macro-fiscal stability.

⁸ In FY20, 5 additional Cat DDOs were approved, with 8 more expected to be approved by the end of FY20. The FY21 pipeline includes 6 CAT DDOs.

Box 2. Cat DDOs Help Build the National Platforms for Disaster Risk Management

The core objective of the WBG's Cat DDO instrument is to support countries to build the institutional and policy framework for disaster response. While the Cat DDO also provides access to rapidly deployable resources in the case of a natural disaster, the instrument is about far more than bridge financing in times of need. At its core, the Cat DDO is a Development Policy Operation (DPO) which defines policy reforms, institutional actions, and a clear and measurable monitoring framework to help client countries be better prepared for emergencies. Some concrete examples of DRM preparedness outcomes across the various Cat DDOs that have been approved over the last two fiscal years include:

- adoption of national disaster risk management policies to establish, streamline and strengthen DRM institutions, coordination frameworks, partnerships, and regulations
- approval of a National Urban Development Policy that incorporates DRM as a cross cutting issue to improve urban resilience,
- strengthening of emergency management information systems,
- adoption of a National Public Health Strategic Plan to establish and clarify all ministry roles and responsibilities relative to public health emergencies,
- incorporation of disaster risk information in the development of territorial and land use planning instruments,
- improved safety standards in the management of school infrastructure through risk-informed rehabilitation and retrofitting program,
- establishment of mandatory technical standards for incorporating disaster risk into all public investment projects,
- strengthening of building codes to consider multi-hazard resilient design standards, and
- development of disaster risk financing policy and mechanisms, including the creation of National Emergency Funds.

Cat-DDO policy actions also bring together stakeholders across different ministries and agencies enabling disaster risks to be addressed in a comprehensive manner. As countries work to strengthen their disaster readiness in the years to come, the Cat DDO can play a major role linking the disasters, funds, and policy to ensure that urgent needs are met while long-term policy goals are reached.

New reforms to the Crisis Response Window (CRW) under IDA 19 will expand the emergency financing mechanism to include early response for slower-onset crises – namely, food insecurity and disease outbreaks. In FY18/FY19, US\$942 million of CRW resources were allocated to respond to crises in Dominica, Mongolia, Yemen, Tonga, Lao, Mozambique, Malawi and Zimbabwe (on an exceptional basis). The reforms that will take place under the IDA 19 Replenishment will allow CRW financing to be utilized for responses that address food insecurity and disease outbreaks at an earlier juncture to help contain the impacts of such shocks before they escalate into major catastrophes.

Contingent Emergency Response Components (CERCs) are increasingly being embedded into IPF projects as a tool to support emergency response. A CERC is a contingent financing tool embedded in an IPF that channels uncommitted balances from existing projects to disburse quickly during a disaster. CERCs enhance preparedness by having teams frontload the process of helping counterparts identify modalities

of implementation to be used in a crisis. The uptake of this tool has increased in the last two years, with a total of 108 projects including CERCs⁹ in FY18/FY19, covering over US\$7.5 billion¹⁰ in lending across all regions. This is a dramatic increase compared the 58 projects including CERCs in FY16/FY17 and the 51 projects in FY14/FY15. During this period, 13 CERCs were activated in response to disaster needs. While this is an increase compared to previous fiscal years, there is still opportunity to increase emphasis on the planning and fiduciary work that helps to make CERCs operationally ready to be activated and implemented should a crisis hit. Recent examples of where CERCs have been successfully triggered in the last two years include in Indonesia following the 2018 earthquake and tsunami; in Mozambique following Cyclone Idai; and in the Democratic Republic of Congo following the Ebola outbreak.

C.3 Scaling Solutions for Disaster Risk Financing

The last few years have seen an increase in integration of disaster risk finance within WBG operations focused on DRM, social protection, and macro-fiscal stability. FCI's Crisis and Disaster Risk Finance (CDRF) global team through its Disaster Risk Financing and Insurance Program (DRFIP) provides technical and financial assistance to over 50 countries globally, including to 35 World Bank's lending projects, amounting to a total amount of US\$5.9 billion in WBG lending operations since FY15, with US\$2.9 billion leveraged in the last two years alone (FY18/FY19). Countries in all regions have increasingly developed comprehensive financial packages (including reserves, risk transfer, and contingent financing instruments) to improve financial resilience to disaster shocks. While technical support has been successful in developing DRF strategies, several constraints persist in developing actual financial solutions including: (i) a lack of financing for solutions such as reserve funds, contingent credit lines, parametric insurance schemes, catastrophe bonds which require a significant upfront commitment of funds; and (ii) low technical capacity for design and implementation of financial solutions, which can be technically complex, particularly when countries first embark on a process to develop them.

Country demand for disaster risk financing solutions has evolved over the last few years, from requests for development of financial protection strategies, to requests for help implementing these strategies. In FY18 and FY19, the focus moved the agenda toward larger investments in structured financial solutions for vulnerable countries. This was based on evolution in country demand, with countries requesting support that beyond the technical work to assistance designing, structuring, financing and using solutions that can be negotiated and arranged in advance to finance government-owned and government-driven disaster response plans.

In response to increasing interest for disaster risk finance among development partners, the Global Risk Financing Facility (GRiF) was launched in FY19 as a multi-donor trust fund that will scale up pre-arranged solutions for vulnerable countries. Housed at GFDRR and implemented by FCI, GRiF was established to respond to the increasing client demand for moving beyond technical support to co-finance costs of financial solutions and build greater incentives for preparedness in client countries across all development sectors. As a US\$200 million+ MDTF financed by Germany and the U.K., GRiF provides grants to help countries overcome technical and financial barriers that emerge while putting financial instruments in place. The program provides grants to pilot new and scale up existing financing solutions, particularly to

⁹Projects with CERC Components per Global Practice (FY18/FY19): Education (5); Energy & Extractives (7); FCI (4); Health, Nutrition & Population (16); Water (9); Transport (17), Agriculture & Food (23); Urban Resilience and Land (21); Social (2); Environment & Natural Resources (4)

¹⁰ The amount of financing is indicative, since the availability of funds to be reallocated through CERCs will depend on the amount of uncommitted funds that can be reallocated without disrupting projects.

address macro-fiscal shocks countries face, and design interventions that protect impacts on all sectors, for example, Water, Energy, Agriculture, as well as human development sectors such as Health and Education. To date, GRiF has provided four grants for a total of about US\$50 million in Jamaica, Malawi, Mozambique, and Sierra Leone and has a pipeline of US\$150 million+ in grants over the next two years.

Crisis and Disaster Risk Finance is becoming an integral part of fiscal planning and public investment planning. Finance ministries and central banks are increasingly considering disasters and other crises as an important part of wider macro-fiscal planning and risk management frameworks. This includes integration of these issues in key planning tools such as macro-economic models, fiscal plans, fiscal risk statements, debt sustainability analysis, budget planning, public expenditure reviews, public investment diagnostics, and poverty diagnostics.

Finally, the WBG continues to support countries in strengthening the economic and fiscal resilience by enabling a broad range of market-based risk transfer solutions, including for disaster and commodity risks. The WBG group is uniquely positioned as the only MDB with a Disaster Risk Insurance Platform that offers risk transfer products to clients. In the last two years, the WB Treasury executed US\$2 billion in risk transfer transactions for clients in insurance and capital markets. In 2018 and 2019 Treasury's Disaster Risk Insurance Platform, executed the largest ever sovereign risk insurance transaction (US\$1,360 million Pacific Alliance CAT Bond for Chile, Colombia, Mexico and Peru), the first catastrophe bond sponsored by a sovereign in Asia (US\$225 million Philippines CAT Bond), and the first parametric insurance transaction in local currency (US\$595 million Philippines subnational CAT risk insurance program in 2017 and 2018). From this coverage, three payouts were made in 2019: the Philippines received US\$16 million after an earthquake event and US\$10 million after a typhoon event, and Peru received an insurance payout of US\$60 million following a magnitude 8.0 earthquake event on 26 May. Moreover, demand for weather index-based crop insurance remains high. In FY18/FY19, the WBG issued 3.7 million weather index-based crop insurance contracts, providing US\$614 million in financing, reaching 18.5 million end-beneficiaries, including in Senegal, Pakistan and India, through the Global Index Insurance Facility (GIIF) housed in the FCI's Crisis and Disaster Risk Finance global team. Country support is essential to guide clients in finding the optimal suite of products. Implementing insurance, derivative and catastrophe bond programs can present serious challenges for governments and public entities due to the complexity of the underlying statistical models, legal documentation, procurement constraints and market dynamics.

D. Challenges, new priorities, and emerging opportunities

A number of key WBG corporate commitments are providing momentum to efforts to mainstream DRM and resilience considerations into lending operations. In the Action Plan on Climate Change Adaptation and Resilience, launched in January 2019, the WBG pledged to ramp up direct resilience and adaptation climate finance to reach US\$50 billion over FY21–25 (through IDA and IBRD), more than double what was achieved during FY15–18. Furthermore, the IDA19 policy commitments will advance the crisis risk management agenda in IDA countries by committing to strengthening the implementation of pandemic preparedness plans in at least 25 IDA countries (through technical assistance, lending and investment) and support to at least 25 IDA countries to reduce the risks of climate shocks on poverty and human capital outcomes by supporting programs that incorporate adaptive social protection into national systems or reduce climate threats to health. These are reflections of a renewed and strengthened corporate commitment that both builds on and complements ongoing efforts to mainstream DRM, by continuing to increase availability of tools and financing to address growing needs.

D.1. Strengthening the analysis of DRM and Macro-fiscal issues

One priority in the Action Plan is the inclusion of disaster risk considerations in regular economic and fiscal planning and policies. This can be done by adapting standard analytic processes, such as macroeconomic modeling, debt sustainability analysis, poverty diagnostics, public expenditure reviews, and public procurement guidelines, so that they take into consideration risks associated with disaster shocks and demonstrating economy-wide benefits of early climate change adaptation actions. This will be a long-term effort, since the tools needed for such analyses are still under development. Capacity-building efforts will also need to be scaled-up commensurately.

Macro-modelling of the interlinkages between the natural disasters and the economy is a new domain that is rapidly evolving. MTI's current work program is focused on ensuring that economic tools adequately incorporate existing knowledge of these linkages, while working with partners to push that frontier and include currently missing channels. World Bank's macro-modeling teams run two macro modelling systems, and disaster and climate risks are being introduced into each of them. The MFMod system which is used for short-term forecasting and policy analysis with a focus on out-of-equilibrium dynamics, and the ENVISAGE / MANAGE Computable General Equilibrium (CGE) models which are most frequently used in analyzing longer-term questions, including climate change. The multi-country CGE modeling framework ENVISAGE is already a climate-aware modelling system, while climate features are being incorporated into the single-country focused MANAGE system. The models have been recently used in Slovakia, Indonesia, Saudi Arabia, and Malaysia. Work is currently underway in Pakistan and Vietnam, with advanced planning for work in Uganda and Kenya. The MTI team is currently working actively to improve the consideration of natural disasters in the MFMod framework. Work is advanced to include damage functions, and preliminary work has already been conducted in the case of Jamaica for hurricanes, using analysis to evaluate alternative risk management and financing strategies.

D.2 New tools and methodologies leverage the latest technology and data to help guide projects

New methodologies, tools and data analytics have been developed over the last two years, creating the foundation for more efficient analysis of and solutions for resilience. Over the past years, rapid advances have been made in the use of disruptive technologies (satellites, drones, GPS mobile phones, street view, open data, machine learning) to provide information quickly and in a cost-effective manner. A key challenge in risk reduction is timely collection of actionable risk data which include information on socio-economic activity, the concentration of people, housing, and facilities, and adequate mapping at local scales. Given the fast-growing, largely unplanned, and un-surveyed towns and cities, new approaches are needed that can significantly scale up the coverage and frequency of data collection while also lowering the costs and complexities involved in order to integrate risk considerations into the urbanization process. One example is the Open Cities Africa, which has performed mapping campaigns in 22 African cities informing several urban resilience operations, with over 500 people trained on digital cartography, over a thousand local citizens engaged, over 500,000 features mapped, hundreds of square kilometers of drone imagery collected. Spatial data can be used to perform rapid damage assessments following a disaster. For example, the GRADE approach employs disaster risk modelling techniques in combination with historical damage data, census and socio-economic survey data, satellite imagery, drone footage, and other media. The approach complements other post-disaster damage and loss assessment approaches and processes, such as the PDNA adopted by the United Nations, the EU, and the World Bank in 2008. Currently GRADE covers spatially detectable physical damages of assets (agriculture, infrastructure and buildings) and efforts are underway to improve estimation of economic losses, or physical damages in

other sectors. For data and analytics, the Famine Action Mechanism (FAM) partners have been building on existing famine early warning systems by exploring the applications of econometrics, machine learning and artificial intelligence to enhance the capacity to forecast severe food security risks. New partnerships have been formed for these efforts, including with global technology firms. This experimental research is already providing quantitative insights into the various drivers of severe food security across different countries and has contributed to the development of financial models which can be used to mobilize limited resources earlier.

Efforts are ongoing to guide and implement gender-sensitive and inclusive approach to DRM, building notably on the 2016-2021 gender action plan of the GFDRR, which recognizes not only the gender-differentiated impacts of disasters, particularly in terms of violence, exclusion, and inequality, but also the importance of translating these considerations into gender-differentiated policies and interventions. Guidance has been developed by the GFDRR to guide robust gender assessments that lead to concrete needs identification and gender-specific recovery strategies and frameworks.¹¹

In order to improve resilience, the IFC has developed sectoral tools to help identify potential climate-related risks to the projects and enable risk management. So far, the tools are mainstreamed in sectors that include ports, waterways, airports, roads, forestry, pulp and paper, and insurance, and similar mainstreaming is under way in additional sectors. The tools used internally by industry and environmental and social specialists in project appraisal bring DRM into the set of risks considered in normal business practices.

As a result of climate change and other environmental and socioeconomic trends, new threats and more acute or widespread hazards are emerging. In the past two years the world has witnessed new types of threats that may require an expansion of DRM activities and strategies into new emerging hazards. These encompass extreme heat, large fire events, hazardous air pollution, avalanches and wide-spread loss of wildlife – and cover new regions for drought and fire risk (e.g. Nordic and Arctic zones). For example, unprecedented severe heat waves with temperatures reaching in the 50 °C (123.4 °F) as seen in India, Egypt, Japan, Europe – combined with a lack of preparedness – resulted in the loss of human life, reduced infrastructure performance such as train networks, and reduced economic productivity. Cities are even more vulnerable to heat events due to the urban heat island effect. Severe heat waves also seem to affect elderly people disproportionately due to factors associated with lack of access to cooling in homes, hospitals and retirement homes; the need for more sophisticated medical requirements; and the lack of mobility and the exclusion from mainstream society. These impacts are exacerbated by low economic status. Finally, extensive fire events occurred in a number of regions of the world in 2019. These trends are threatening hard won development gains and increasing demand for more DRM solutions that can address a broader and more complex set of risks.

Since DRM often involves long-term investments and planning, all interventions need to account for the effect of long-term climatic trends and increased uncertainty. The impact of climate change on the spatial distribution and intensity of natural hazards makes planning more challenging, and all assessments much more uncertain. For instance, climate change models still show a wide range of possible futures for global sea level rise or the change in the timing and intensity of the West African monsoon. This uncertainty needs to be considered through appropriate decision-making approaches and methodologies. New methods such as robust decision making, decision trees, or adaptive pathways have been developed in the search for more robust options and are now being piloted and implemented for World Bank project

¹¹ Cf. “Gender Equality and Women’s Empowerment in Disaster Recovery”, Disaster Recovery Guidance Series, GFDRR, August 2018. <https://www.gfdrr.org/en/publication/gender-equality-and-womens-empowerment-disaster-recovery>

in various GPs. For instance, the Water GP developed a methodology for addressing climate uncertainty using a decision tree framework for water resource planning and design. The WBG also supported the development of the Hydropower Sector Climate Resilience Guide with the International Hydropower Association.

One important challenge is lack of capacity in client countries to source, customize, and use complex risk models. Natural hazard risk assessments are fundamental to understanding sectors and geographical areas most at risk. This type of evidence-based information is critical for advocacy, policy formulation, public awareness and prioritization of scarce resources. Such assessments require significant expertise to design, supervise, implement, understand and use. Over the past ten years, the WBG has developed deep experience in the commissioning of disaster risk assessments for the benefit of clients, often with grants made available from GFDRR. Risk models are valuable not only for country-specific use but globally since results can help the Bank, policymakers and private investors determine potential impact of disasters on people, property, services, livelihoods and the environment regionally and globally. These types of risk assessments almost always require a concentration of international expertise across different fields, along with computational power and software that is rarely available in client countries. The WBG provides a critical service in commissioning and supervising the development of customized risk models/assessments, and in continuing to invest in strengthening the capacity of clients to use them.

D.3. Expanding the role of the private sector

The WBG Adaptation and Resilience Action Plan includes the commitment to launch a coordinated approach to mobilizing private sector climate adaptation finance by the World Bank, IFC, and MIGA. The Mobilizing Finance for Development (MFD) approach focuses on crowding in development finance, including private finance, in part by creating a conducive regulatory framework and promoting financial solutions to mitigating risk such as through loan guarantees and strengthening domestic capital markets. As regards MFD in the DRM space, this approach focuses on promoting changes in the enabling environment for climate resilient growth and developing innovative project-level finance solutions that integrate climate and disaster risk management measures.

The private insurance sector can play a strong role on disaster risk finance. The WBG collaborate closely with the private insurance sector to develop market-based sovereign and individual insurance solutions, for example, through policy and regulatory reforms to improve domestic catastrophe risk insurance markets, and through the development of sovereign catastrophe risk insurance pools. The WBG is also co-chairing the Insurance Development Forum (IDF), an industry-led public-private partnership established to facilitate and support the growth and development of insurance-related resources and capabilities to help achieve the objectives of the Sustainable Development Goals (SDGs).

In the critical area of resilient urban development, the City Resilience Program (CRP) supports the provision of upstream operational and technical support focused on mobilizing public and private financing around a broader resilience agenda. The CRP does this through a three phased engagement process to mobilize financing, comprising: i) upstream general legal and capacity analysis related to project financing in a specific city and strategic guidance to project teams on potential areas for expanded financing for urban resilience projects in the city; ii) financial and regulatory analysis related to a specific project concept; and, iii) specific transaction advisory services.

In the case of resilience and DRM, while the bulk of financing still comes from the public sector, there are opportunities to increase private sector finance. Private sector engagement in DRM presents opportunities to leverage commercial capabilities, a practice which is common now in the fields of risk

modeling, disruptive technologies, and insurance, but which needs to expand in order to focus on how DRM impacts jobs, firms, competitiveness, and critical supply chains. In the hydromet sector, for example, there is growing interest in public-private sector partnership, based on the awareness that the private sector has a key role to play as both producer and consumer of customized and improved weather services for users. At the same time, it is important that public roles in hydromet services not be compromised, particularly key functions related to enforcing standardized approaches to weather observation and data sharing. GFDRR recently supported a pilot in Myanmar, where the Department of Meteorology and Hydrology (DMH) worked together with a private company to learn how to use new tools to improve the quality and visualization of DMH's services to better address the needs of users.

D.4 DRM/FCV nexus and crisis work

The WBG is providing support to strengthen resilience to disaster risk for conflict and fragile states with inherently complex operating environments. In FY18/FY19, several disaster events took place in contexts of fragility arising from conflict, such as in Libya, Syria, Yemen, Somalia, South Sudan and Zimbabwe. Fragile and conflict affected areas are particularly vulnerable to crises, less-equipped to deal with their consequences, and present more complex operational challenges, including capacity constraints, and a need for coordinated efforts among additional development partners. Natural disasters can also act as threat multipliers in FCV settings, as shown by episodes of drought in the Horn of Africa which exacerbated food insecurity and displacement, spurring disputes over resources and deepening existing fragility and conflict. Slow onset events in FCV contexts require greater investment in ex-ante approaches and integrated cross-sectoral solutions. During this reporting period, GFDRR launched a new initiative on the nexus between disasters and fragility or conflict affected situations which is beginning to think about how to apply DRM lessons and methodologies to FCV settings, especially for post-crisis recovery. Such thinking is helping to inform an emergency response project currently under preparation in Somalia (P173315), which will address the impact of the present complex emergency which is characterized by connections between flood, drought, and conflict.

Given the growing number of migrants, asylum seekers and refugees across many client countries, it is becoming increasingly important to integrate policies and actions that address the specific needs of these groups of the population, particularly in refugee-hosting communities and countries. Discrimination, lack of language skills and social networks, and poverty often restrict migrants from accessing resources and means of protection against natural disasters available to the local population. The WBG's FCV agenda now includes a strong commitment to forced displacement. In Bangladesh, for example, the Emergency Multi-Sector Rohingya Crisis Response Project (P167762) will build 53 multi-purpose disaster shelters in and around the camps; pave more than 200 km of roads; provide water and sanitation services for around 200,000 people; and set up 1,500 solar street lights. The project will also strengthen emergency response services, provide community works and services, and prevent gender-based violence.

As part of its 2030 forward look and IDA19 commitments, the WBG is focusing more on crisis prevention and preparedness in FCV countries, including the development of the first strategy for Fragility, Conflict and Violence as well as Crisis Preparedness Metrics. To help build the evidence base for investments in preparedness, the Global Crisis Response Platform (GCRP) Secretariat has committed as part of IDA19 to help support the development of metrics to monitor countries' progress towards crisis preparedness through a set of standard indicators that would allow tracking over time and comparisons across countries and sectors. A proposed approach is to be developed by end of FY21. Teams working on this project

recognize the value of building on DRM experiences and lessons learned as they develop the broader crisis preparedness metrics.

D.5 Methodologies for Measuring DRM Going Forward

Monitoring the outcomes of DRM projects and operations and tracking the evolution of the portfolio over time is an exercise that is becoming more complex. The experience of preparing this report has demonstrated the need to revisit the current simple methodology for measuring DRM commitments since it would be useful to develop an approach that can track the more diverse, multi-sectoral, and complex set of applications of DRM tools, approaches, and solutions which are reflected in the portfolio. In addition, even within the investments captured, the current methodology does not allow for accurate reflection of the role that different sectors and teams play to enable DRM investments. This is because the current methodology captures commitments based on where lending projects are mapped, with commitments documented only under that particular sector. Within disaster risk management, the role of disaster risk finance remains largely cross-sectoral. For instance, FCI has traditionally housed global teams that support GPs and regional teams on to embed disaster risk finance policy reforms and financial instruments in investment operations to strengthen fiscal planning for disasters as well as to crowd in private insurance markets through upstream technical assistance, which the current methodology does not capture.

As DRM mainstreaming has progressed, additional issues with the measure of DRM commitments have appeared:

- First, since DRM co-benefits include reconstruction action and sometimes large projects, the amount of commitments can vary significantly from one year to the next. Short-term fluctuations in the DRM commitments could result from better or worse years in terms of disaster occurrence.
- Second, classifying DRM commitments is getting more challenging as risk management and resilience-building activities are increasingly being mainstreamed into cross-sectoral operations.
- Third, many interventions reduce risk, but only indirectly. Expanding the methodology so that it includes, for example, solutions that address weather variability (such as water management) or that support long-term resilience (such as changes in agriculture systems), could allow for a more comprehensive analysis.

The WBG Adaptation and Resilience Action Plan includes a commitment to develop, test, and implement a “resilience rating system” for WBG projects which may be helpful for efforts to widen the definition of what contributes to mainstreaming DRM. The resilience rating system, which is currently being developed, will try to: i) create incentives to go beyond single climate-smart projects and increase support for projects that build wider systemic resilience; ii) more effectively report on what the WBG and clients are doing to build the resilience of populations and economies; iii) capture and encourage best practices and facilitate learning on what works and can be generalized; and iv) establish a global standard for financial markets that can be used to incentivize investments in resilience-building projects. The development of the resilience rating system is currently being explored by a cross-GP team focusing on six sectors initially, which include road transport, non-road transport, water supply and sanitation, hydropower, agriculture, and forestry. In terms of monitoring, this rating system could prove essential for two reasons: i) because it aims to measure resilience outcomes rather than inputs it would provide a more accurate snapshot of WBG ability to mainstream resilience and ii) after a period of piloting and consultation, and if deemed relevant, this rating system could serve as the basis for DRM/resilience objective setting against which outcomes would be measured. Going forward it will be important to revisit

the current methodology for tracking DRM commitments with this exercise since it has the potential to create the foundation for an improved methodology that can better reflect the growing depth and breadth of DRM commitments in the WBG portfolio.

E. Conclusion

This update on the FY18/FY19 progress in Mainstreaming Disaster Risk Management in its operations reaffirms strong cross-sectoral demand for technical assistance, policy advice, and investments that strengthen resilience to disasters. The trend of DRM commitments in WBG's portfolio remains steady in the face of emerging development priorities and needs. As the share of DRM investments spreads broadly across sectors, new ways of addressing challenges are being developed, particularly in Health, Nutrition & Population; Macroeconomics, Trade and Investment; and Agriculture Global Practices (GPs).

Recent progress in expanding the range of DRM instruments across sectors and themes demonstrates that the role of the WBG in this agenda continues to be valued. While this report focuses primarily on the trends seen in DRM commitments in lending operations, the WBG's integrated approach to DRM includes advisory services, partnerships with bilateral and multilateral organizations, technical assistance that builds capacity and supports knowledge creation, and investments in resilience supported by operational tools that can prompt necessary reforms. The influence and impact that the WBG achieves through its full array of tools and partnerships goes well beyond the impact of projects, supporting policy shifts that can reduce risk across an economy.

As the scope and scale of disasters continues to affect client countries, learning from experience informs the way that WBG instruments, financing windows, trust funds, programs, and partnerships are evolving. Countries continue to ask for solutions tailored to their particular needs, and this requires deep regional knowledge, an ability to adapt global best practices, and technical experience. Since the complexity of today's DRM challenges requires constant innovation, the WBG will continue to invest in new tools and solutions, in being more agile in responding to disasters, and being prepared to address the complex situation of compounding crises.