Striving Toward Disaster Resilient Development in Sub-Saharan Africa

Strategic Framework 2016–2020

GFDRR
Global Facility for Disaster Reduction and Recovery

WORLD BANK GROUP

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Foreword

As we write this, Africa is suffering from the strongest El Niño it has faced in decades, causing major floods and droughts throughout Africa, leading to rising economic losses and major impacts on the lives and livelihoods of millions across the continent. Countries across the continent are declaring states of emergency, and are calling on the international community for support.

Such crises in Africa are becoming the new norm as the impacts of disasters continue to increase. Natural disasters, such as droughts, floods, landslides, storms, and earthquakes are a regular occurrence, and climate change is increasing the frequency and intensity of weather-related hazards even further. The impacts of natural disasters and climate change are further compounded by poorly planned development – as the fastest urbanizing continent in the world, Africa faces a huge challenge as people and assets continue to be placed in harm's way.

Forced to face these challenges, African countries are emerging as strong leaders in driving the resilience agenda forward by reforming their emergency management systems, establishing new legislation for risk reduction, modernizing early warning and preparedness systems, exploring innovative risk financing solutions, and shaping the global and regional policy dialogue.

In our support to African countries, and in alignment with our twin goals of ending poverty and enhancing shared prosperity, the World Bank is stepping up its efforts to systematically invest in disaster and climate resilience, as highlighted in the Africa Climate Business Plan launched at COP21 in Paris. To illustrate this engagement, the plan intends to bring early warning systems to 100 million people across 15 African countries and pilot new urban resilience approaches.

These ambitious targets cannot be achieved without broad-based partnerships and cooperation. The World Bank works with the African Union and the Regional Economic Communities, as well as technical agencies to promote coordinated and comprehensive approaches to managing common disaster and climate risks. In addition, partnerships with international organizations, bilateral donors, and major regional development partners – such as the African Development Bank – are ramping up resilience activities across the continent. The World Bank's Africa Disaster Risk Management program could not have achieved as much as it has to date without the strong support of the Global Facility for Disaster Reduction and Recovery (GFDRR), and its donors, particularly the European Union and Japan, who have boosted the program's impact in recent years.

This Strategic Framework 2016–20 clearly articulates the way forward in increasing knowledge, capacity building and advocacy, partnerships and investments, as we collectively strive toward disaster and climate resilient development in Africa. We thank all partners and institutions who have contributed to the development of the Framework, and look forward to joining forces on its implementation.

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The *Strategic Framework 2016–2020: Striving Toward Disaster Resilient Development in Sub-Saharan Africa* was prepared to increase awareness of the importance of disaster risk management as an integral part of sustainable development, showcase the contributions of the World Bank, governments, and development partners in this field, and describe the strategic framework and priority areas as the World Bank scales up their efforts in disaster risk management in the Africa region.

The development of the Strategic Framework benefited from a wide range of stakeholder consultations with i) Country Governments, such as Ethiopia, Ghana, Malawi, Kenya, Senegal, and Uganda; ii) Regional Economic Communities, including Economic Community of Central African States (ECCAS), Intergovernmental Authority on Development (IGAD), and Southern African Development Community (SADC); (iii) international organizations; and iv) civil society. This report has been made possible with financial support and technical cooperation of the Global Facility for Disaster Reduction and Recovery (GFDRR).

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Building Back Better in Dakar, Senegal – Constructing Emergency drainage works in Dalifort area of Dakar following frequent flooding.

Executive Summary

"If you want to go quickly, go alone. If you want to go far, go together."

—African proverb

Africa[i] is at a turning point. It has made remarkable strides, with annual growth averaging around 4.5 percent over the last 20 years. Foreign direct investment has increased seven-fold, life expectancy by six years, and school enrollment has risen to 74 percent. Infant and maternal mortality rates have decreased by 26 and 22 percent respectively in the last decade. These development gains are threatened by climate and disaster risks that impact 10 million people on average every year in Africa since 1970. El Niño is currently affecting east and south Africa, where 11 million children are at risk of hunger, water stress and disease.[ii] Future trends predict that these risks could force 43 million Africans below the poverty line by 2030.[iii]

The region has taken many steps toward strengthening its resilience to disaster and climate risks. The World Bank has supported governments in disaster risk management (DRM). In 2015, the Sendai Framework for Disaster Risk Reduction, the Sustainable Development Goals and the Paris Agreement have stressed the role of DRM in building resilience. This is a good time to take stock of the World Bank's efforts in this area, and set future directions for scaling up. This strategic framework presents the programmatic approach for supporting Africa towards climate and disaster-resilient development in 2016–2020.

DRM IN AFRICA – AN URGENT DEVELOPMENT AND POVERTY REDUCTION AGENDA

Over 2,000 natural disasters have affected 460 million people, killing over 880,000, since 1970 in Africa. Floods are most frequent, accounting for 42 percent of economic damages. However, droughts account for 78 percent of the affected population. While less common, other hazards such as cyclones, earthquakes, landslides, volcanoes and epidemics have wide-reaching economic and development consequences. Resources required for recovery divert planned development outlays, thereby creating fiscal pressures. Disasters also have a macroeconomic cost, including loss—and slowing growth—of GDP. Damage and losses caused by natural disasters,

[i] Africa refers to the Africa Region of the World Bank in this document.
[ii] UNICEF.
[iii] World Bank, 2014.

including slow-onset ones such as droughts, have caused an erosion of substantial percentages of GDP, and marked deceleration in GDP growth, in major African economies in recent years.[iv]

Disaster losses and people's exposure to hazards are increasing in Africa. This is partly due to rapid urbanization, poorly planned human settlements often in high-risk areas, unsustainable land use, infrastructure stress, increasing climate variability and rising population. Environmental degradation, poverty and conflict further aggravate the risks and reduce the coping capacity of communities.

REGIONAL POLICIES HELP SHAPE RESILIENT DEVELOPMENT

Africa has robust regional policy frameworks for disaster resilience, inspired by global development frameworks, which focus on regional cooperation. The Africa Regional Strategy for Disaster Risk Reduction, Regional Economic Communities' (RECs) Policies and Plans of Action etc. support DRM at regional and national levels. Several RECs provide data management on weather, climate and early warning service. In addition, the RECs support an enabling environment and political advocacy for DRM mainstreaming in national policies and programs. River basin organizations are increasingly involved in managing transboundary hazards such as flood. Regional climate centers help strengthen national forecasting and early warning capabilities.

WORLD BANK SUPPORT TO MANAGE DISASTER RISKS IN AFRICA

The World Bank supports DRM in Africa through lending and non-lending operations. It has a growing portfolio of investment projects as well as advisory services and analytics, supporting long-term disaster resilience, rapid response to emergencies, knowledge sharing and building capacities and partnerships. The Bank finances long-term disaster resilience through targeted DRM investment *projects* and DRM *components* mainstreamed in operations across social protection, water, agriculture, environment, urban, transport and other sectors. These investments stand at a total of $5.4 billion (9.5 percent of the region's portfolio).

While countries are expressing higher demand for ex-ante DRM investments, post-disaster financial and technical assistance remains important. In the past six years, the Bank has supported post disaster assessments in more than 16 countries in the region, often leading to investment operations, such as the $80 million Malawi Floods Emergency Recovery Project and the $40 million Mozambique Emergency Resilient Recovery Project (2015).

Technical assistance and capacity building activities support policy development and institutional strengthening, risk and vulnerability assessments, early warning systems, and risk financing. On a policy level, DRM is increasingly integrated in country dialogue through the Systematic Country Diagnostic and the Country Partnership Framework. Disaster risk and vulnerability assessments inform risk reduction investments. An increasing number of African countries are considering disaster risk financing and insurance options, to build the resilience of their governments (e.g. establishing DRM funds or assessing sovereign insurance options) and vulnerable members of society (e.g. establishing public-private partnerships for agricultural insurance).

[iv] World Bank estimates.

The World Bank promotes knowledge, innovation and partnerships. Technology provides development solutions. In particular, mobile phones, geospatial mapping and open data can make risk data more accurate, accessible and usable. Partnerships with regional organizations, United Nations and the European Union have helped countries access both knowledge and funding from global programs and partners, such as the Global Facility for Disaster Reduction and Recovery (GFDRR) and the Africa Caribbean Pacific Group of States – European Union (ACP– EU) Programs.

Several lessons emerge from the Bank's DRM operations in Africa. Managing disaster risk is crucial to saving lives, protecting livelihoods and reducing poverty. It is important to understand the underlying risk factors. Technical support and capacity building strengthen country policy and institutional frameworks. A disaster often increases political awareness for DRM, leading to allocation of necessary resources. Early warning and preparedness are cost effective. Regional integration optimizes the capacity of institutions and economies of scale. With growing risk and exposure, there is growing interest in disaster risk financing and insurance.

STRATEGIC PRIORITIES – THE WAY FORWARD

This framework is based on World Bank's prior experience, and guided by consultations with governments and development partners. It supports the World Bank's corporate Twin Goals of eliminating extreme poverty and promoting shared prosperity, its Strategy for Africa[v] and five-pillared DRM framework.[vi] Building the resilience of vulnerable populations is a key poverty reduction intervention, and the World Bank will advance this agenda along three lines of operations: *investments, knowledge and partnerships*.

***Investments*:** DRM will be further expanded and integrated across relevant Bank operations. These investments will contribute towards the Bank's commitment to increase direct funding for climate work to 28 percent annually by 2020. The DRM-related investments will focus on the following priority areas:

- Implement the Africa Hydromet Framework Program for modernizing National Meteorological and Hydrological Services (NMHSs) and enabling climate-resilient development, in collaboration with the African Development Bank (AfDB) and the World Meteorological Organization (WMO);
- Support countries in utilizing disaster risk financing instruments and mechanisms, including (i) Catastrophe Deferred Drawdown Options (Cat DDO), (ii) Contingent Emergency Response Components (CERC), (iii) access to the Crisis Response Window (CRW); and, (iv) adoption of Immediate Response Mechanism (IRM);
- Assist cities in addressing their resilience challenges such as rapid urbanization, poverty reduction, increasing hazard exposure and environmental degradation. With the high concentration of population and impacts of climate change, coastal cities are particularly at risk;

[v] Africa's Future and the World Bank's Support to it, World Bank, 2011.
[vi] The World Bank's five pillared DRM framework consists of: (1) Risk Identification; (2) Risk Reduction; (3) Preparedness; (4) Financial Protection; and (5) Resilient Reconstruction.

- Mainstream DRM in investment operations in key sectors such as agriculture, water management, social protection, landscapes, coastal management etc;
- Continue to support countries in post-disaster response and investment operations for resilient recovery.

Knowledge: In order to improve the management of risks, the World Bank will increase technical support and advisory services for the understanding of disaster and climate risks through the following actions:

- Enhance the understanding of disaster risks by developing country risk profiles, build capacity to undertake risk assessment, and foster a community of practice for risk assessment;
- Help countries to develop strategies for risk financing, notably through the ACP-EU Africa Disaster Risk Finance Program;
- Build governments' institutional capacity and support policy development for resilience to disaster and climate risks, focusing on vulnerable communities;
- Develop Multi-sectoral Investment Plans for Climate and Disaster Risk Management for 15 additional African countries within the IDA17 period;
- Promote regional cooperation and peer learning by strengthening the Regional Economic Communities, particularly IGAD, ECOWAS, ECCAS and SADC;
- Support countries in post-disaster situations through damage and needs assessments, recovery planning, donor coordination and resource mobilization;
- Maintain and improve the Emergency Monitoring and Advisory System to facilitate Bank's internal decision-making.

Partnerships: The World Bank will continue to build partnerships to facilitate knowledge exchange, build technical and operational collaboration, and leverage resource mobilization. These actions will:

- Leverage the Africa Working Group for Disaster Risk Reduction as the Strategic Partnership Platform for coordination with African countries and their development partners;
- Strengthen the DRM policy and institutional frameworks of the Regional Economic Commissions in order to advance regional integration, cooperation and information exchange;
- Deepen DRM engagement with African countries from national to local levels to cover all aspects of disaster risk management from risk information to risk financing;
- Expand knowledge exchange and technical cooperation with development partners, using GFDRR as the partnership mechanism to further the DRM resilience agenda in Africa, particularly leveraging the ACP-EU programs, and the Japan – World Bank Program for mainstreaming DRM.

The World Bank is committed to scale up investments, knowledge and partnerships. This Strategic Framework leverages decades of development experience of the Bank, builds on the success of existing initiatives, and supports governments and communities in shaping a sustainable and resilient future for Africa.

Acronyms

ACP	Africa, Caribbean, Pacific
ACMAD	African Centre of Meteorological Applications for Development
AfDB	African Development Bank
ADRF	Africa Disaster Risk Finance initiative
AUC	African Union Commission
AWG	African Working Group
CCA	Climate Change Adaptation
CPS	Country Partnership Strategy
CSO	Civil Society Organization
DaLA	Damages and Loss Assessment
DPL	Development Policy Lending
DPO	Development Policy Operation
DRFI	Disaster Risk Financing and Insurance
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
ECCAS	Economic Community of Central African States
ECOWAS	Economic Community of West African States
EMAS	Emergency Monitoring and Advisory System
EU	European Union
GFDRR	Global Facility for Disaster Reduction and Recovery
HFA	Hyogo Framework for Action
ICPAC	Inter-Governmental Authority on Development Climate Prediction and Applications Centre
IDA	International Development Association
IGAD	Inter-Governmental Authority on Development
IOC	Indian Ocean Commission
IOI	Indian Ocean Island
JDLNA	Joint Damage, Loss and Needs Assessment
NEPAD	New Partnership for African Development

NGO	Non-governmental organization
NMHSs	National Meteorological and Hydrological Services
ODI	Overseas Development Institute
PDNA	Post-Disaster Needs Assessment
PoA	Programme of Action
PCRAFI	Pacific Catastrophe Risk Assessment and Financing Initiative
PSNP	Productive Safety Nets Project
REC	Regional Economic Communities
SADC	Southern Africa Development Community
SADC DMC	Southern Africa Development Community Drought Monitoring Centre
SIDS	Small Island Developing States
TA	Technical assistance
WFP	World Food Programme
UN	United Nations
UNDP	United Nations Development Programme
UNISDR	United Nations Office for Disaster Risk Reduction
UN OCHA	United Nations Office for the Coordination of Humanitarian Affairs
UR	Understanding Risk
WMO	World Meteorological Organization

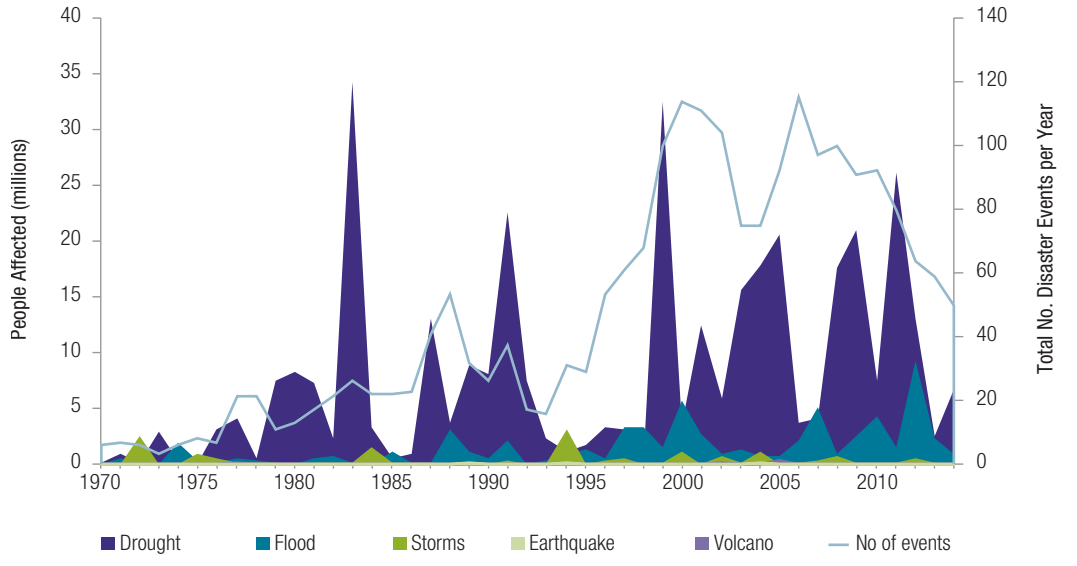
A man works to rebuild his home in Madagascar after weathering the effects of Cyclone Felleng.

Chapter 1

Disaster Risk Management in Africa – An Urgent Development and Poverty Reduction Agenda

Disasters cause severe impacts on social and economic development in many African countries—and the poorest suffer the most. Between 1970 and 2014, natural disasters have affected more than 460 million people and resulted in more than 880,000 casualties across the region.[1] Droughts are a perennial problem and affect millions of people across the Horn of Africa, Sahel and southern Africa. The catastrophic 2011–2012 drought in the Horn of Africa affected over 13 million people. Frequent floods disrupt the lives and livelihoods of populations across many economic centers and countries and affect the poor most severely.[2] Beyond the immediate

Figure 1. Number of reported disasters and number of people affected by disaster type in Sub-Saharan Africa



Source: EM-DAT, 2015.

[1] Unless otherwise stated, all disaster data has been obtained from the Emergency Events Database (EMDAT), of the Centre for Research on the Epidemiology of Disasters at the *Universite Catholique Louvain*, Belgium.
[2] Douglas et al., 2008.

impacts, disaster-induced damage and losses have the potential to significantly reduce development gains in the region, and can have long lasting impacts ranging from years to decades. Damage to assets generates term economic losses, diverts limited financial resources from the development agenda and increases fiscal pressures. If not adequately managed, disaster shocks can further marginalize the poor and vulnerable by diminishing their productive assets and sources of income generation, thus leading them further into poverty traps.[3] Therefore, disaster risk management (DRM) needs to become a key poverty reduction intervention, focused on protecting and improving lives and livelihoods.

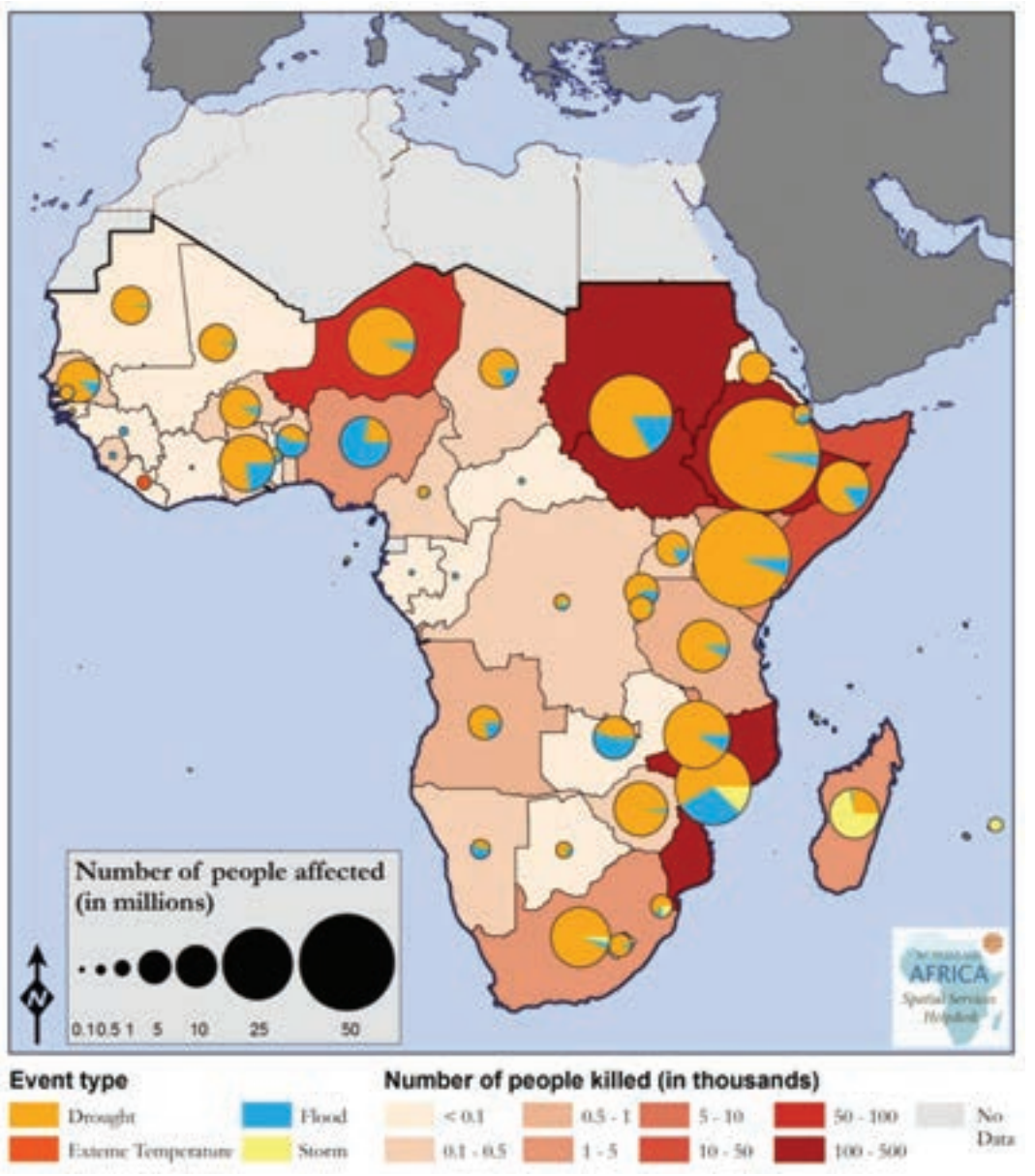
The most common disasters in Africa are hydro-meteorological or climatological, and consist of floods, droughts, and cyclones and storms. Since 1970, Africa has witnessed more than 750 flood events, of which approximately 415 (or 55 percent) have taken place in the last decade alone.[4] Droughts affect the highest number of people in the region, accounting for 78 and 79 percent of the total disaster affected population and casualties, respectively. The average annual population affected by drought is just over eight million. In terms of estimated damages, however, floods are responsible for the most damage costs (42 percent), followed by cyclones and storms (33 percent), and then droughts (17 percent). While a lesser concern, geological hazards such as earthquakes and volcanoes, and other hydro-meteorological and climatological hazards such as landslides, wildfire, and extreme temperatures are also present. It should be noted that while the data above provides best estimates from international datasets, total economic impact is severely underestimated as disaster losses and secondary impacts are typically not included. Additionally, frequent, lower-intensity events that can have significant local and aggregate impacts are often neglected.

Since 1970, Africa has experienced more than 2,000 natural disasters, with just under half taking place in the last decade. Increasing disaster risk has largely been a result of the increased number of people and economic assets exposed to hazards, as well as the inability of vulnerable groups to cope with disasters. Climate change is also projected to increase the frequency and severity of hydro-meteorological and climatological hazards, further increasing disaster risk. Although the impacts of such disaster events are severe and growing, the majority of the countries and communities at risk are not taking the necessary measures to reduce the risk they face, nor are they adequately prepared to respond when hazards strike.

In African cities, the nexus of rapid and often unplanned growth, lack of basic infrastructure and services, environmental degradation, and weak and fragmented urban governance structures is creating a host of urban disaster risk hotspots. Urban areas typically have the highest economic losses due to the high density of economic assets.[5] In Africa, many economies revolve around one major urban center. While urban areas are affected by several hazard types, flooding is the most damaging for African cities. From 1997 to 2008, it was found that floods were responsible for the overwhelming majority of monetary disaster damages and accounted for one-third of the total of 3.3 million people affected by disasters in African cities.[6] Africa

[3] (Carter, Little, Mogues, & Negatu, 2007; Gaillard & Cadag, 2012).
[4] Guha-Sapir,, & Hoyois, 2015.
[5] (McClean, 2010).
[6] (Wisner & Pelling, 2009).

Figure 2. Climatological disasters in Sub-Saharan Africa, 1971–2012



Source: EM-DAT.

is urbanizing faster than any other region in the world and is projected to have its urban population more than triple by 2050.[7] It is also the region with the highest proportion (62 percent) of its city dwellers living in slum conditions.[8] Such rates of urban growth present both disaster risk

[7] (UNDESA, 2014).
[8] (UN-Habitat, 2013).

challenges and opportunities for the region. Retrofitting buildings and infrastructure already in place is much more challenging and expensive. Thus it is a critical time for expanding cities in Africa to integrate disaster risk management into their city planning, and similarly, to engage in risk reducing activities that address present day development needs.

Disaster risk is the result of the intersection of natural hazards, vulnerability and exposure. Chapter 1 will review the most prevalent hazards in Africa, as well as the factors driving vulnerability and increasing exposure of the population across the continent.

1.1 DISASTER PROFILE

Natural disasters in Africa are predominantly hydro-meteorological and climatological. Epidemics also comprise a large proportion of disasters in the region. This section will review the climate profile across the continent, the most common disasters of drought, flood, cyclones and storms, and epidemics, as well as the less frequent earthquakes, volcanoes and landslides.

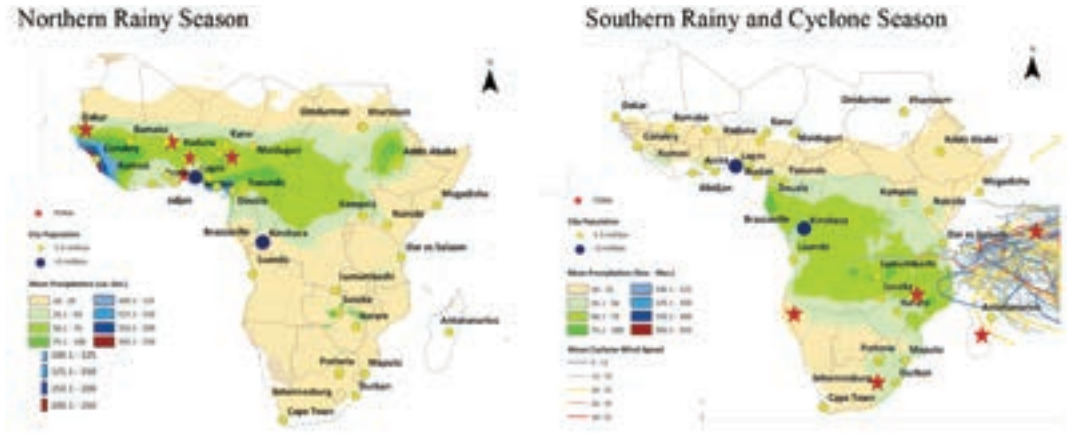
The climate profile in Africa

Rainfall patterns in Africa are linked to the Intertropical Convergence Zone (ITCZ),[9] which moves in a southerly position during the northern hemisphere winter, and in a northerly position during the northern hemisphere summer.[10] Many extreme hydro-meteorological events on the continent may be linked to the El Niño Southern Oscillation[11] phenomena. The zones affected by these linked phenomena are:

1. *West Africa:* The northern migration of the ITCZ brings heavy rains along the West African coast from July to September. On the dry grounds of the Sahel, intense rainfall can quickly lead to flooding, but the rains are not as damaging in the coastal regions which receive regular rainfall over a long time period.
2. *East Africa*: Due to its equatorial position, the high grounds in East Africa see flooding during two rainy seasons when the ITCZ moves north between February and May and southwards from October to December. Since the distance covered by the ITCZ is large in East Africa, the amount of rain is distributed over a larger area, leading to less intense rainy seasons than in West Africa.
3. *Southern Africa*: Southern Africa has a single rainy season with frequent flooding linked to the southerly movement of the ITCZ from November to February. In addition, the region is subject to infrequent but heavy rains and flash floods punctuating the normally arid and semi-arid conditions.
4. *Central Africa*: Central Africa's climate is both influenced by the movement of the ITCZ (notably in northern and western parts similar to western Africa) and its proximity to the equator and the tropical

[9] Intertropical Convergence Zone is a global scale area of convergence between dry air masses on both poleward sides of the equatorial belt of most air. The interface of the warm air with dry stable air forms clouds and rains, which occur as major seasonal feature and intense localized thunderstorms.
[10] (Williams & Kniveton, 2011).
[11] El Niño Southern Oscillation is a quasi-periodic climate pattern that occurs across the tropical Pacific Ocean on average every five years. It is characterized by warming or cooling of temperature known as *El Niño* and *La Niña*, respectively. The ENSO weather phenomena is said to cause severe impact on the global climate (NOAA, 2010).

Figure 3. Rainy seasons in West, East and southern Africa and recent flooding events



Source: UNEP 2010.

rain forest zones, where a diurnal climate is prevalent with high amounts of precipitation throughout the year.

Floods

Floods are the most frequent disaster in Africa. Seventeen of the 52 largest trans-boundary river systems in the world are located in Africa, in addition to 160 major fresh water lakes. The most prominent river systems are the Niger, Senegal and Volta in West Africa; the Congo River and Lake Chad Basin in central Africa; the Nile in East Africa; as well as the Zambezi, Limpopo, and Orange River in southern Africa. In addition, there are several smaller rivers, many of which are seasonal. Most parts of these rivers are unregulated, and seasonal floods occur frequently. Notably, the densely populated delta regions of the major river systems, such as the Niger and Zambezi deltas, suffer from major floods. The impact is exacerbated by weak flood protection, insufficient urban drainage systems and increased runoff due to land degradation. In 2012, for example, floods heavily impacted the Niger River, including large parts of Niger and Nigeria and sections of Cameroon. In Nigeria alone, this affected 2.8 million people and their livelihoods and led to a noticeable drop in agricultural production (the most impacted productive sector).

Flash floods—especially in urban areas—can impact any region after extreme rainfall. Urban floods, however, are a constant threat throughout the continent. Insufficient infrastructure and limited urban planning result in a lack of enforced standards for construction, rendering

Flooding in Tanzania resulted in major road damage. Credit: World Bank.

large parts of the urban population vulnerable to natural hazards. This is particularly true for rapidly growing informal settlements and low-income communities. Urban floods are often a combination of river flooding and flash floods. Rapidly growing urban areas are often situated in low-lying river deltas or coastal areas directly exposed to sea-level rise, coastal surge and inundation. In September 2009, the floods in Burkina Faso were caused by exceptionally high amounts of rainfall (263 mm), which fell around the capital of Ouagadougou in less than 12 hours. Weak drainage infrastructure and collapsing hydraulic infrastructure exacerbated the floods, which affected more than 150,000 people and killed 46. Urban areas, such as Ouagadougou, are usually the engines of economic growth and centers of economic assets, often multiplying the negative economic impact from a disaster.

Droughts

Affecting the most people in Africa, droughts occur predominately in semi-arid and sub-humid areas of the Sahel countries, the Horn of Africa and southern Africa. In these regions, impacts are especially large due to the reliance on rain-fed agriculture and pastoralism. Drought, triggered by insufficient precipitation over an extended period, has a cyclical pattern. This is occurring at increasingly higher frequencies due to deforestation, land-cover changes, and unsustainable land management. In East and southern Africa, climate change is projected to intensify drought in some seasons in the 21st century[12]. Droughts have the most pronounced impact on food security, affecting millions of vulnerable people every year in the region. The three most affected zones are:

Prolonged periods of drought impact major agricultural areas such as this sunflower field in South Africa. Credit: Richard Jary.

1. West Africa: The Sahel region is a semi-arid transition zone between the Sahara desert in the north and the more humid Savannah region in the south stretching from Mauritania in the west to Djibouti in the east of Africa. Traditionally the Sahel region is associated with parts of French-speaking West Africa. The Sahel has a very short growing season during three rainy months, and is highly vulnerable to climate shocks due to its marginal production.
2. East Africa: The Horn of Africa is frequently affected by widespread and devastating droughts. The 2011 drought was considered the most severe in the last 60 years.
3. Southern Africa: This region includes arid and semi-arid regions of Mozambique, Malawi, South Africa, Namibia and Botswana.

[12] (Niang et al., 2014).

Epidemics

Recurrent outbreaks of epidemics are a threat to social and economic development in Africa. From 1970–2014, the region was exposed to 766 epidemic disasters, accounting for 18 percent of the total disaster deaths (second behind droughts) and three percent of the disaster-affected population. The most frequently reported epidemics include cholera, meningitis, measles, viral hemorrhagic fevers, plague and dengue.[13] Underlying factors such as weak public infrastructure, inadequate access to safe water and sanitation, primary health conditions, limited public awareness of prevailing health risks and weak health systems with limited capacity identification and response have

Box 1: The 2014 Ebola Outbreak in West Africa

The Ebola Virus Disease (EVD) outbreak that began in March 2014 is the most widespread in history and the first to reach epidemic proportions. The three most affected countries have been Guinea, Liberia and Sierra Leone, though cases have also been reported in Mali, Nigeria, Senegal, Italy, Spain, the United Kingdom and the United States. Since West African countries had previously not recorded any cases, the EVD was able to spread for several months before it was recognized. In its initial phases (approximately three months), the case fatality rate was 86 percent among the early confirmed cases and 71 percent among clinically suspected cases.[a] As of December 2015, there has been over 28,000 reported confirmed, probable, and suspected cases of EVD in Guinea, Liberia, and Sierra Leone, with over 11,000 reported fatalities. In addition to the significant loss of life, the epidemic has resulted in significant economic and livelihood impacts.[b] Airline traffic was interrupted, border crossings were closed and restrictions were made on movement, schools and local markets experienced prolonged closures and crop harvests have lowered, resulting in increased food security risks. The worst impacts of the EVD crisis have been felt by the poor, who reported losing their jobs and sources of income, difficulty accessing medical services and traumatic feelings of fear.[c] On a macro level, it is estimated that the most affected countries will lose at least $1.6 billion in forgone economic growth in 2015.[d]

[a] Baize et al., 2014
[b] WHO, 2015.
[c] Mukpo, 2015.
[d] World Bank, 2015.

[13] Kasolo & Roungou, 2015.

contributed to the high frequency and magnitude of these outbreaks.[14] Almost ten percent of all epidemic-related deaths in Africa over the past 35 years took place in the single year of 2014 as a result of the Ebola crisis (see Box 1). It is estimated that the most affected countries—Guinea, Liberia and Sierra Leone—will lose at least $1.6 billion in forgone economic growth in 2015 as a result of the epidemic.[15] Addressing epidemic risk has not historically been an active part of the disaster risk management portfolio; for example, attempts to combat the HIV/AIDS epidemic in Africa have been the purview of The World Bank's Health, Nutrition and Population practice. However, the inclusion of biological hazards in the Sendai Framework for Disaster Risk Reduction and recent outbreaks of epidemics like Ebola Virus Disease warrant further consideration on how this hazard should be addressed in the region.

Country residents are not the only ones affected by cyclones. Wildlife is also exposed to this danger. Credit: Bevs Photos.

Cyclones and storms

Cyclones and tropical storms affect countries on the southeastern coast of the continent along the Indian Ocean. Approximately 12 tropical cyclones form in the Southwest Indian Ocean basin each year, of which approximately 25 percent make landfall.[16] Mostly affecting Madagascar, Mozambique and a number of Indian Ocean islands (such as Mauritius and the Comoros archipelago), storms account for approximately 35 percent of damages and losses in Africa.[17] Most of these damages take place during the peak cyclone season from November to May. In eastern and western Madagascar, a single cyclone season can cause losses and damages to individual households equivalent to 10–30 percent of the average annual GDP per capita. The 2008 cyclone season, for example, damaged some six percent of existing health centers and four percent of primary schools, in addition to causing extensive damage to irrigation and transport infrastructure.[18] Looking at the long-term trends over the past six to seven decades, to the extent data allows, there has not yet been a significant increase in the number of cyclones making landfall in Madagascar or Mozambique in the past few years.[19] Recent trends, however, indicate that an increasing number of tropical cyclones are tracking to the south of Madagascar, which will likely increase

[14] Ibid.
[15] Thomas et al., 2015.
[16] (Mavume, Rydberg, Rouault, & Lutjeharms, 2010).
[17] (Guha-Sapir et al., 2015).
[18] (Government of Madagascar, 2008).
[19] (Fitchett & Grab, 2014).

the hazard exposure of countries such as Swaziland and South Africa in the next several decades.[20] Additionally, in Africa, rapid population growth is projected to increase the number of people exposed to cyclones by 54 percent by 2030,[21] thereby significantly increasing tropical cyclone risk.

Earthquakes, volcanoes and landslides

Less common than floods and drought, seismic risk is nonetheless a threat to Africa. Countries along the Rift Valley, stretching from Eritrea to Mozambique, are particularly vulnerable to earthquakes. Also along the Rift Valley and on Indian Ocean islands, several volcanoes are known to be active, including Mount Nyiragongo in the Democratic Republic of Congo and Mount Karthala on the Comoros. As was demonstrated by the 2004 Indian Ocean tsunami, low-lying countries along the coast of the Indian Ocean are exposed to tsunami hazards. While generated more than 6000 km from Africa's east coast, the tsunami resulted in several hundred casualties and damage to coastal infrastructure across the countries of Somalia, Mauritius, Tanzania, Kenya, South Africa and Madagascar.[22] These events, however, are extremely infrequent, and an Indian Ocean Tsunami Warning System that has subsequently been put in place will significantly assist in live-saving efforts in Africa region.

In countries with hilly terrain and high levels of rainfall, landslide risk is high due to widely prevalent soil erosion, deforestation and unsustainable land management. With Africa's heavy reliance on agriculture, subsistence farmers and pastoralists remain the most affected by land degradation, which results from soil erosion (sometimes leading to landslides), deforestation and un-sustainable land management. Land degradation is a leading driver of increasing landslide hazard across Africa. Degradations such as deforestation, over-grazing and urbanization in mountainous or hilly areas increase the risk for landslides. These factors contribute to the instability of an earthen slope and just one trigger, such as a heavy downpour, can initiate the failure of an entire hillside. In February 2014, heavy rainfall around Bujumbura, the capital of Burundi, created landslides and flash flooding, disrupting road and water infrastructure, destroying more than 1,000 houses and leaving 69 people dead.[23]

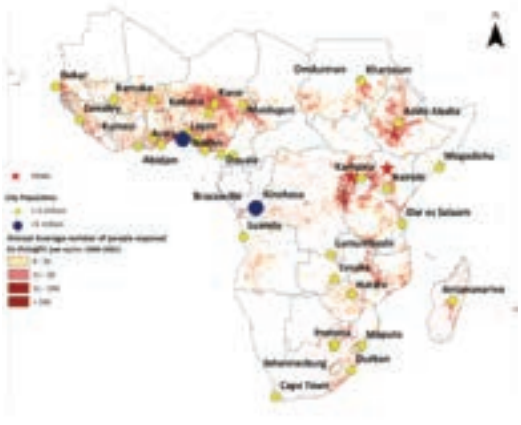
In 2014, The Nyamuragira Volcano in Eastern Congo became active again. Source: Meteoweb.eu.

1.2 ECONOMIC AND SOCIAL IMPACTS OF DISASTERS

Disasters can lead to significant macroeconomic costs—including decline in GDP growth and cumulative permanent GDP loss. These impacts

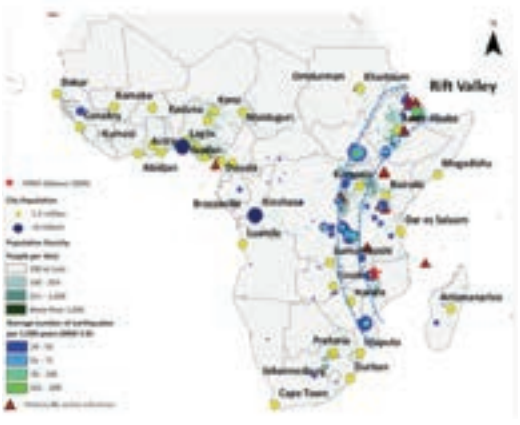
[20] (Fitchett & Grab, 2014).
[21] (Peduzzi et al., 2012).
[22] (Obura, 2006).
[23] (The World Bank, 2014a).

Figure 4. Areas exposed to drought in Sub-Saharan Africa



Source: World Bank Maps Spatial Services.

Figure 5. Location of Rift Valley, seismically active areas and volcanoes



Source: World Bank Maps Spatial Services.

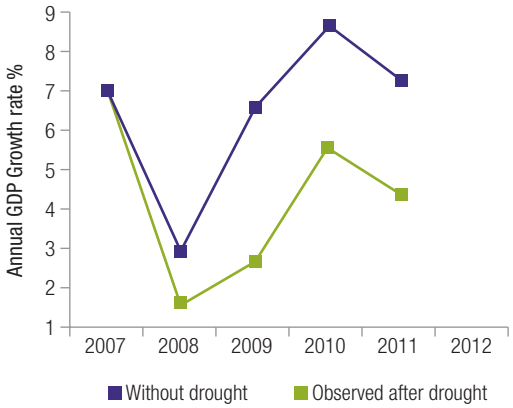
Figure 6. Number of people affected by drought, flood, insect infestation, earthquake and storms by country from 1975–2013

Source: World Bank Maps Spatial Services.

affect not only the government's budget but also the long-term development prospects of affected countries. The 2008–2011 drought in Kenya caused an estimated $12.1 billion in damages and losses, slowing the country's GDP by an average of 2.8 percent per year.[24] In 2012, floods in Nigeria caused combined damages and losses of $16.9 billion, or 1.4 percent of GDP. The impact on smaller economies is even more severe. In Madagascar, a 2008 cyclone caused damages equivalent to four percent of GDP. Heavy rains in Lesotho in 2010 caused losses equivalent to 3.2 percent of GDP (Figure 8). A recent World Bank study estimates that Malawi, a small country with a GDP of only $4.7 billion, loses 1.7 percent of GDP every year to droughts and floods. Severe disaster events could even contract Malawi's GDP by as much as 10.4 percent.[25] Most recently, PDNA results following the devastating 2015 floods in Malawi indicated the effects

[24] (Government of Kenya, 2012).

Figure 7. Annual GDP growth in Kenya, observed after drought vs. projected without drought

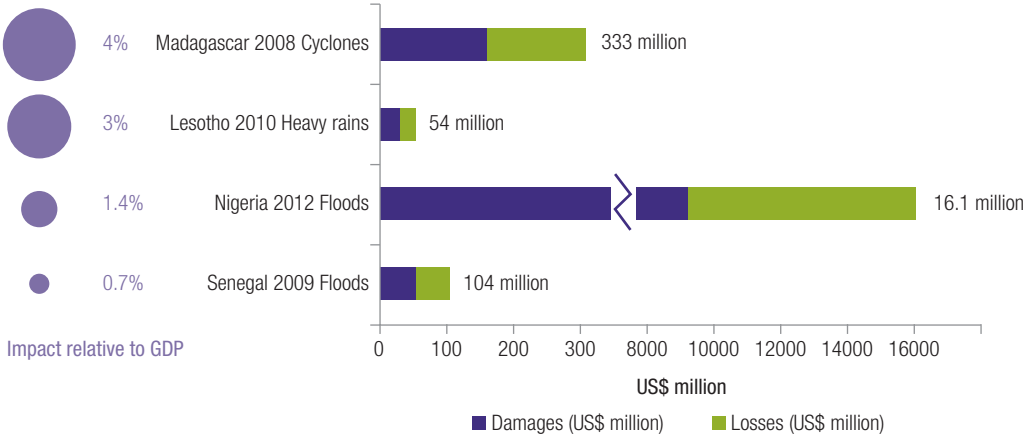


Source: Government of Kenya op. cit.

of damages and losses will result in a projected negative impact on GDP growth of 0.6 percent. The economic costs resulting from the negative impact of the floods, other things being equal, may thus lead to GDP growth falling short of the 5.8 percent projection set for 2015.[26]

Across the African continent, estimation of natural disaster damages remains extremely challenging as data are often poorly reported or simply not available. Nonetheless, best estimates from EM-DAT report that natural hazards resulted in an average of about $400 million a year in damages. Without adequate risk management strategies, projections in population and economic growth alone are expected to quadruple baseline damages to $1.6 billion a year by 2100.[27] This does not include the effects of climate change, which is likely to increase the severity and frequency of some meteorological and climatological hazards. Such figures underscore the importance of integrating risk management into development planning to ensure that future development gains are not eroded by hazard events.

Figure 8. Economic impact of disasters



Source: World Bank, Various Post-Disaster Needs Assessments.

[25] (The World Bank, RMSI, & GFDRR, 2010a, 2010b).
[26] Government of Malawi, 2015).
[27] (Ruocco, Gasparini, & Weets, 2015).

Disasters also have severe negative impacts on human development. Beyond their impact on incomes, disasters can lead to long-term setbacks in education, health, and employment opportunities. Following severe floods in Nigeria in 2012, four states with a Human Development Index (HDI) below 0.5 (Anambra, Taraba, Kebbi and Kogi) sustained severe socioeconomic damage and losses.[28] The floods reduced access to the basic food supply at the household level due to the damage of shelter, productive assets and basic infrastructure (such as roads leading to markets). This contributed to an increase in the number of under-nourished people over the short- to medium-term while food prices inevitably increased. During and after the Kenya drought from 2008–2011, the HDI in the affected regions fell from 0.6 to 0.4.[29] Regions with a lower HDI experienced higher per capita damage and losses.

In 2012, widespread flooding across West Africa also contributed to a reduction in the effectiveness of education systems. The destruction of classrooms in affected countries such as Benin, Cameroon and Ghana, reduced net enrollment rates for primary and secondary schools. In addition to physical damage to schools, low-income families often remove their children from school following disaster events, either to reduce their expenses or so that children help to earn income for the household. In terms of health, disasters can also reduce access to care facilities where an interruption of just a few days could cause serious setbacks for patients receiving daily treatments for chronic ailments.

A study that examined the long-term disaster impacts on children of poor households in Ethiopia, Kenya, Niger and Zimbabwe found heightened risk of malnourishment, stunting and decreased schooling in children exposed to drought[30] (Box 2).

1.3 DISASTER INDUCED POVERTY

The poorest find it hardest to cope with disaster shocks, which can keep people from moving out of poverty and even push more people into poverty. People living below, at or just above the poverty threshold are vulnerable to fall into or further into poverty when hit by negative shocks. In areas of recurrent disasters, this hampers growth, leading to a "poverty trap." A recent study by the Overseas Development Institute (ODI) found that by 2030, up to 118 million extremely poor people (living below $1.25 per day) will be exposed to drought, floods and extreme heat in Africa alone.[31] Of the 11 countries across the globe most at-risk from disaster-induced poverty, eight are in Africa.[32]

Frequent disasters perpetuate the poverty cycle by contributing to increased poverty levels and often affecting the poorest and most vulnerable parts of the population. An assessment of the economic vulnerability to disasters conducted in Malawi[33] and data from recent PDNAs[34] illustrate this. Econometric model results for Malawi

[28] (Government of Nigeria, 2013).
[29] (Government of Kenya & UNDP, 2010).
[30] (Seck & Fuentes, 2010).
[31] (Shepherd et al., 2013).
[32] The 11 countries most at risk of disaster-induced poverty (high numbers of people living in poverty, high multi-hazard exposure, inadequate capacity to minimize impacts) are Bangladesh, Democratic Republic of the Congo, Ethiopia, Kenya, Madagascar, Nepal, Nigeria, Pakistan, South Sudan, Sudan and Uganda.
[33] (The World Bank et al., 2010b).
[34] (Government of Kenya, 2012; Government of Lesotho, 2012; Government of Nigeria, 2013).

Box 2: Impacts of Drought on Human Development in Four African Countries

Ethiopia: Children aged five or less in drought-prone areas are 36 percent more likely to be malnourished and 41 percent more likely to be stunted if they are born during a drought year. This translates into some two million "additional" malnourished children.

Kenya: Being born in a drought year increases the likelihood of child malnutrition by 50 percent.

Niger: Children aged two or under born during, and affected by, a drought year are 72 percent more likely to be stunted.

Zimbabwe: Children born during drought-affected periods are, on average, 2.3 cm shorter. Delayed start of schooling results in a loss of 0.4 years of school life, which leads to a 14 percent loss of lifetime earnings.

estimate that droughts reduce GDP on average by one percent each year, while extreme events such as the drought from 1991/1992 contracted GDP by more than ten percent. On average, droughts cause a 1.3 percent increase to poverty in Malawi, but this can increase to almost 17 percent or more during a severe drought event such as the 1991/1992 event, which affected 2.1 million people.

In Madagascar, the three cyclones which struck the island in 2008 affected some 342,000 people and had substantial impacts on the livelihoods of the affected population. It resulted in an estimated loss of 6.2 million working days, primarily in the fishing and agricultural sectors. This loss of manual labor, farm and off-farm income particularly affected the most vulnerable groups of society who depended on casual labor opportunities. In Madagascar, as well as in Kenya and Lesotho, recent PDNAs highlighted that areas of the country which had higher disaster related per capita impacts subsequently resulted in lower human development index.

Disasters lead to income shocks, and loss of assets and livelihoods. Low income groups are often forced to settle in high-risk areas (for example, inundation zones), live in houses that cannot resist hazard shocks, and rely on a single livelihood source (such as agricultural and pastoral) with few alternative income opportunities. Hazardous areas are often the only sites that low income groups can occupy that are close to income-earning opportunities. Low-income neighborhoods have the least provision for protective infrastructure and fewest resources on which to call when disasters damage or destroy their housing. Following a disaster, poor and vulnerable populations often have only limited options to reconstruct according to disaster-resistant standards. The poor also have

Box 3: Impact on the Poor Following Flooding

In Niger, approximately 70 percent of the population relies on agriculture for its livelihood. During the droughts of the 1970s and 1980s, a large portion of the rural, agriculturalist population migrated to low-lying parts of urban areas throughout the country seeking alternative livelihoods. Once drought conditions eased, rainfall began to return to normal levels and in the subsequent 15 years, combined with the intensification and densification of the urbanization plus low levels of maintenance of flood protection infrastructure, the migrants began to suffer from recurrent flooding events. Cities most affected were Niamey, Dosso, Tillabery and Diffa, where flooding displaced large portions of the migrant population who were also often the poorest.

The $100 million Niger Disaster Risk Management and Urban Development Project, launched in December 2013, aims at supporting improved flood risk management. The project supports an innovative combination of improved urban drainage and flood protection infrastructure, sustainable water management practices upstream of the watersheds, more predictable financial resources for maintenance implemented by local governments and early warning and civil protection capacity. As a priority, the project also supports at-risk households which are among the poorest.

less access to potable water and sanitation infrastructure in an emergency, leaving them more vulnerable to waterborne diseases.

Areas in countries with low development indicators are often limited in their development due to repeated disasters. Figure 7 illustrates the relation of per capita damage and the average HDI of different districts following the 2008–2011 drought in Kenya. Smaller but recurrent events can also have significant poverty impacts. The study on Malawi mentioned above found that average droughts cause a 1.3 percent increase in poverty, while one in 25-year drought events could cause an increase in poverty of up to 17 percent, equivalent to 2.1 million people. Small-scale farmers and non-farm poor urban households were found to be most vulnerable as they spend a large proportion of their income on food.[35]

Disasters can intensify the socio-economic and political conditions that persisted before the disaster, perpetuating a cycle of poverty and vulnerability. Poor households often lack access to the various assets associated with the sustainable livelihoods framework, which leaves them less able to cope with shocks and stressors. Examples of such assets include income, savings, insurance, adequate housing, social safety nets, land and education, and can be broadly categorized into physical, natural, human, financial and social capital. These underlying drivers of impoverishment can exacerbate the long-term impacts of disasters, and in turn, lead to further marginalization. Systemic risks, such as drought or large-scale flooding, also often lead to breakdowns in informal safety nets on which the poor rely when faced with a lack of

[35] (The World Bank et al., 2010b).

Benin floods left areas inundated with water, resulting in difficulty in maneuvering through the area.. Credit: The World Bank Group

access to formal systems such as insurance and access to credit. Official government safety nets can be overstretched and unable to cope with a large influx of newly destitute populations. Similarly, during times of crisis, government programs aimed to assist affected households may exclude informal settlers, who are often highly vulnerable and at risk from disaster events. Risk management for low income populations should be interwoven with strategies to build up their assets and improve daily living conditions and overall livelihoods.[36]

1.4 THE DRIVERS OF DISASTER RISK

Global and regional trends further exacerbate the development challenges faced in Africa. A changing climate and rapid unplanned urbanization, often with little or no regard for managing risks, add additional uncertainty and complexity driving vulnerability to natural hazards. Persistent conflicts and environmental degradation increase the vulnerability of hundreds of millions across the continent. Additionally inadequate infrastructure, insufficient information, and weak institutions complicate effective risk management.

Climate change

Climate change will become an increasingly important driver of rising disaster risk in Africa. The recent World Bank Report (2013), "Turn Down the Heat," points toward a number of trends that would result in intensifying weather extremes, leading to a rise in disaster risk.

- Projections point to a high likelihood of increased annual precipitation in the Horn of Africa and parts of East Africa that is likely to be concentrated in bursts and, thereby, increasing the risk of flooding.
- Along the coast of West Africa, a sea level rise will affect coastal cities such as Dakar, Lomé and Lagos.
- Droughts are expected to become more likely in central and southern Africa, and never-before-experienced heat extremes are projected to affect rising proportions of the region.[37]

Water scarcity will become more pronounced throughout much of Africa. This is projected to lead to an overall increase in the risk of drought in southern and central Africa. In presently dry regions, drought frequency will *likely* increase by the end of the 21st century.[38]

[36] (Few, 2003; Gaillard, Pangilinan, Cadag, & LeMasson, 2008; Sanderson, 2012).
[37] (The World Bank, 2013).
[38] (IPCC, 2014).

Cyclone Felleng in 2013 left widespread devastation across much of Madagascar. Many homes were not able to withstand the heavy winds and rain.

In the Horn of Africa and the northern part of East Africa, rainfall patterns are expected to become more extreme. Although substantial disagreements exist between models, many global climate models project that rainfall will increase in the Horn of Africa and the northern part of East Africa. The increases, however, are projected to occur during already higher intensity rainfall periods, rather than evenly during the year, increasing the risk of floods.[39]

Agricultural production is expected to be affected in the near-term. Significant impacts are expected well before mid-century even for relatively low levels of warming. The 0.7°C warming observed over the 20th century has had little impact on the agricultural system. However a 1.5°C warming (expected to occur by the 2030s in some scenarios) could lead to about 40 percent of present maize cropping areas being no longer suitable for current cultivars.[40]

Population growth in coastal areas already exposed to hazards increases potential impacts from disasters. Along Africa's long coast line, a significant number of cities and towns are located in low-river deltas or coastal areas directly exposed to sea-level rise, coastal surges, land subsidence, coastal erosion and other growing risks.

[39] The World Bank, 2013).
[40] (The World Bank, 2013).

Sea-level rise is increasingly a concern for many countries, particularly those with low-lying urban centers such as the densely populated Niger Delta and low-lying areas along the coasts of West and East Africa and Madagascar. Scenarios for climate change show that a 2°C or more rise from global warming in Tanzania could cause a sea level rise of 5–19 cm by 2030, submerging vast areas of land. It is likely that without adaptation, this would possibly lead to more than 850,000 people being forced to migrate to urban areas. Urban areas along large river systems have also attracted formerly rural populations in recent decades, with the latest arrivals having often settled in flood-prone zones.[41]

Rapid urbanization

Urban areas account for significant fatalities and losses from disasters. A review of urban disasters in the EM-DAT database revealed that African cities have been impacted by drought, epidemics, earthquakes, cyclone and storms, floods and extreme temperature events. Floods were the most damaging urban disaster, responsible for more than 90 percent of monetary disaster damages and accounting for one-third of the disaster affected population.[42] As an example, major floods in Dakar, Senegal resulted in costs for reconstruction and improved standards of transport infrastructure that totaled $56 million in damages and $48 million in economic losses. Over 70 percent of the affected people (360,000 out of 485,000) lived in Dakar, the capital and largest city.

Africa is the fastest urbanizing continent in the world, and thus, the hazard exposure of urban populations will significantly increase. With an average urban growth of 3.4 percent, the continent's urban population is projected to reach 1.2 billion by 2050. This means 60 percent of all Africans will be living in cities, a significant increase from the 40 percent in the present day.[43] Africa's largest ten cities are projected to grow 50 percent over the current decade. An extreme example is Ouagadougou where the population is expected to increase by 81 percent in ten years, from 1.9 million in 2010 to 3.4 million in 2020. By 2025, the largest African cities are expected to be located mainly in the region, and the largest agglomerations will be in coastal areas.[44]

Residents of disaster affected zones are often in shock following the devastation caused by extreme events. Credit: Claudiad.

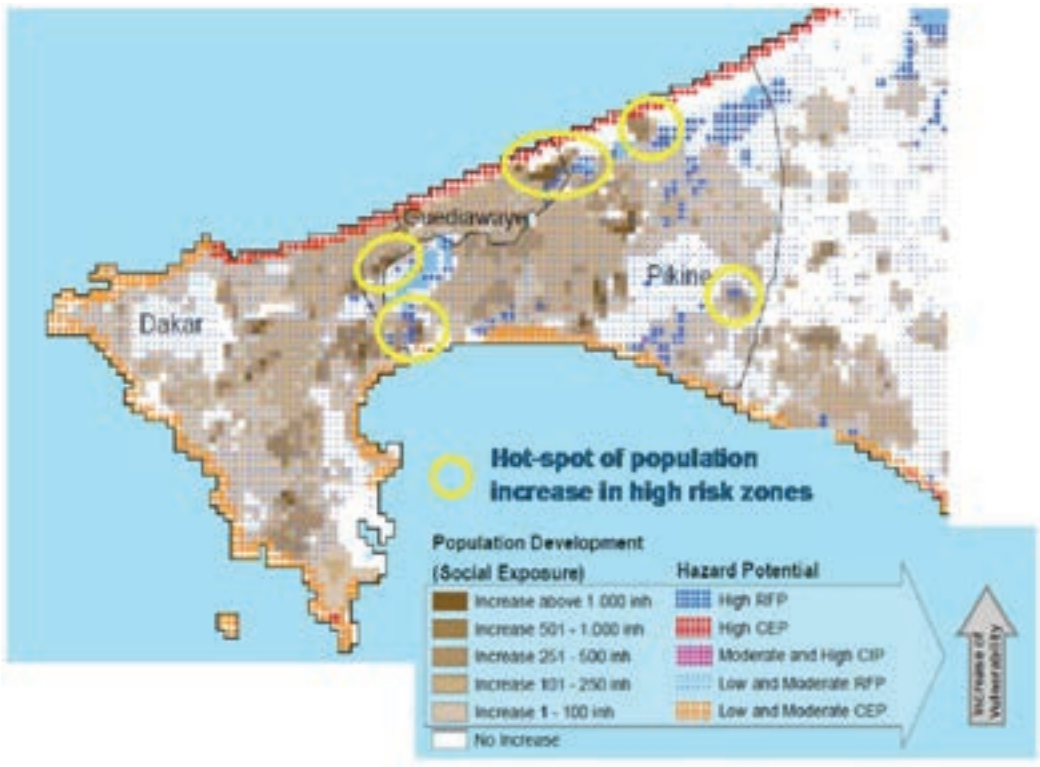
Urban sprawl and informal settlements—two outcomes of rapid and often unplanned urbanization—are exposing citizens to new

[41] (The World Bank, 2013).
[42] (Wisner & Pelling, 2009).
[43] (UN-Habitat, 2010).
[44] (Ruocco et al., 2015).

hazards and increasing the impacts of disasters. Globally, the built up urban area is projected to triple by 2050 as cities are sprawling, and Africa is no exception. This development takes place largely without any urban planning, exposing residents to new hazards that can have cascading impacts. For example, an increase in built-up areas can increase run-off and flood potential, followed by an increasing number of urban epidemics through transmission of vector and water borne diseases. A GFDRR study (2009)[45] concluded that the peri-urban areas of Dakar encompass the largest community exposed to natural disasters within the metropolitan area. Another survey, based on the Climate Change City Primer, reviewed general administrative information, governance structures related to disaster risks, urban planning and land use regulations, as well as political, economic and social factors. The survey found that the local and municipal entities have very limited scope to implement disaster risk management (DRM) strategies and influence policies. Land use planning instruments remain under the influence of national authorities (Figure 9).

As Africa transforms into a largely urban continent, informal settlements are also increasing. Urban land pressure often forces informal settlers to occupy dangerous areas, such as low-lying coastal areas, along and within

Figure 9: Hot spots of population increase in high-risk flood zones in Dakar (Senegal)



Source: Wang et al 2009.

[45] Wang, Montoliu-Munoz, The Geoville Group, & Gueye, 2009.

river channels, under bridges, on steep hillsides and around landfills or dumpsites. Thus, in addition to the threat of eviction and demolition, those living in such marginal spaces must also cope with frequent disaster events. Africa is the region with the highest proportion (62 percent) of its city dwellers living in slum conditions,[46] and their absolute numbers are only projected to increase in upcoming decades. Moreover, informal settlers are especially vulnerable to natural hazards as they typically have limited access to various physical, financial and social resources to cope during or after a disaster event. UN Habitat highlights the example of the Kibera slum, which is located just a few kilometers from the Nairobi city center, and is home to some 500,000 to 700,000 people living at densities of over 2,000 per hectare. It will take more sustainable forms of urban development that create opportunities for economic growth, as well as the reduction of disaster risks within these informal communities to decrease the vulnerability of the poor.

Conflicts

Conflicts and disasters can be mutually reinforcing, worsening negative development impacts and increasing human suffering. From 2005–2009, more than 50 percent of people affected by disasters lived in fragile and conflict-affected states (globally), and 14 out of 20 of the most conflict-affected states are in Africa.[47] The 2011 drought in the Horn of Africa illustrated how political instability and conflict can collide with natural hazards to result in a full-scale complex humanitarian crisis. The resilience agenda can help reduce the impacts of both conflicts and disasters by strengthening the risk management across humanitarian and development planning and implementation.

Conflict and fragility can increase the vulnerability of the exposed population. Not only does a fragile environment make it more difficult to implement DRM investments, conflict can also weaken the coping mechanisms of people**.** Where Kenya borders Somalia, for example, livestock raiding has been shown to affect the coping method of using traditional migratory routes to help populations escape from drought.[48] Conflict also increases disaster risk by displacing people into areas more exposed to hazards and through the impacts it has on physical and psychological health, basic service provision and the security of livelihoods. A result of this can be seen with the pastoralists in Somalia who are unable to follow traditional routes

A soldier stands in the Danakil Desert in the Afar Triangle, Ethiopia. Credit: guenterguni.

[46] UN-Habitat, 2013.
[47] (Harris, Keen, & Mitchell, 2013)
[48] (Harris et al., 2013).

to escape drought due to the presence of armed groups. Furthermore, a 2013 study sponsored by UKAID shows that the disruption caused by natural disasters impacts livelihoods and can lead to individuals joining armed groups.[49] The study also finds that political opportunities can arise following a disaster, which can act as a type of "smokescreen" for opportunists.

Disasters can also act as an external stress on already fragile societies. The 2011 World Development Report found that such stresses raise the risk of violence (The World Bank, 2011b). In certain circumstances, governments can also exacerbate post-disaster suffering and fragility by inhibiting aid on security grounds or appropriating humanitarian aid to support conflict objectives.

While disasters and conflict typically collide to increase risk, there are few examples where disaster events can act as a catalyst for diplomacy and conflict resolution. An example of this is in Aceh, Indonesia following the 2004 Indian Ocean tsunami. The decades-long conflict between the separatist Frees Aceh Movement (GAM) and the central Government had claimed about 25,000 lives, displaced over 400,000 people, destroyed the productive sector, weakened institutions and eroded the social fabric of a large part of the Acehnese society.[50] The urgency of the tsunami disaster accelerated ongoing peace talks and led to an eventual peace agreement between the groups. It should be noted, however, that while the disaster provided a powerful catalyst, non-disaster related factors also had a significant impact on building the diplomatic relations.[51]

Land degradation

Unsustainable land use and land degradation is also contributing to increasing the risk of disasters. Forest degradation and other changes in land cover can increase exposure to floods because the capacity of water to infiltrate is reduced and surface run-off increases. Landslide risk also increases. At the same time, it reduces water absorption, storage capacity and availability for irrigation and power production. Partnerships, such as the NEPAD-led TerrAfrica, support solutions to address these issues, and one example of integration with DRM is with the Togo Integrated Land Management Project – co-funded by the ACP-EU Natural Disaster Risk Reduction Program (NDRR). As part of the TerrAfrica network of projects, the Togo project aims to strengthen the institutional capacity of relevant organizations to manage flooding and land degradation.

Land degradation increases the vulnerability of rural livelihoods to weather extremes and disasters. Some Africa-wide estimates have suggested that about 67 percent of the total area of Africa is affected by some form of land degradation, i.e., about 16 million square kilometers, of which about one-fourth is rated severe to very severe.[52] Other estimates based on remote sensing data paint a less severe picture, suggesting that about ten percent of agriculture and mixed cropping area is affected by land degradation.[53] While estimates on the extent of land degradation vary depending on methodology, they all show significant declines in land quality. This erosion of the natural asset base, which is a

[49] Ibid.
[50] (Fan, 2013).
[51] (Gaillard, Clavé, & Kelman, 2008).
[52] (FAO, 2000).
[53] (Vlek, 2008).

primary foundation of rural livelihoods, undermines food security and constrains economic development. These problems have resulted in the loss of land productivity,[54] declines in forest cover and biodiversity, and decreases in the quality and quantity of water resources.

Gender inequality

The consequences of a disaster on human population can take many forms and affect a society's ability to live and work together.[55] Social support networks can be strained during a disaster, resulting in less support for families whose houses are destroyed by floods, or have a negative impact on a pastoralist community whose grazing land is devastated. Entire communities can be altered during a time of crisis, with poorer populations often receiving the brunt of the impact. Additionally, existing vulnerabilities can be aggravated, such as gender inequality, when disaster-impacted communities use any means possible to cope with large losses or displacement.[56] For example, women may be forced to walk longer distances to retrieve water when local sources run dry from drought, thus putting themselves at increased risk of exploitation.

Women are at particular risk from disasters, often experiencing higher rates of mortality, morbidity and reductions in post-disaster livelihoods. Underlying factors such as lack of means to recoup lost assets, limited livelihood options, restricted access to education and basic services, and in many cases, also socio-cultural norms, exacerbate women's vulnerability to the impacts of disasters. Failure to consider gender in DRM programs likely does not capture the full range of impacts, which can hinder reconstruction, recovery and long-term development of countries that repeatedly suffer from disasters. In contrast, actively focusing on women can make DRM more effective through their participation and empowerment in the planning, decision-making and implementation processes.

[54] (WRI, UNDP, UNEP, & The World Bank, 2005).
[55] (The Interorganizational Committee on Principles and Guidelines for Social Impact Assessment, 2003).
[56] (UNISDR, 2009).

Including building codes into regional policies is just one way to address the "building back better" concept. This helps houses such as this one to keep their roofs during a cyclone.

Regional Policies Help Shape Resilient Development

Frameworks and strategies are important at global, regional and national levels to guide countries to mainstream DRM. Based on the *Sendai Framework for Disaster Risk Reduction* 2015–2030,[57] the region has invested significant efforts in creating a regional policy environment at different levels. The African Union is currently updating the *Africa Regional Strategy for Disaster Risk Reduction*. The Regional Economic Commissions (RECs) are also sharpening their respective policies, strategies and plans of action to advance the DRM agenda within their member states and foster regional integration.

2.1 INTERNATIONAL CONTEXT

Three international agreements were adopted in 2015: i) the Sendai Framework for Disaster Risk Reduction; ii) the Sustainable Development Goals (SDGs); and iii) the United Nations Framework Convention on Climate Change (UNFCCC) Paris Agreement. Given the growing importance of promoting coherence and mutual reinforcement across disaster risk reduction, climate change and sustainable development, this has presented an unparalleled opportunity to align the UN agreements. Thus, while the Sendai Framework remains as the main global policy framework for DRR, synergies across the SDGs and the new climate agreement are critical to promote the advancement of risk reduction.

Sendai Framework for Disaster Risk Reduction (2015–2030)

The Sendai Framework for Disaster Risk Reduction succeeded the Hyogo Framework for Action (HFA) 2005–2015. Its goal and four priorities for action are shown in Box 4. It calls for a shift from disaster management to addressing the underlying drivers of disaster risk, such as poorly planned urban growth and climate change. It also underlines the need to cover frequent, smaller scale events, in addition to larger extreme disasters. In comparison to the HFA, the Sendai Framework places increased emphasis on social processes and weak institutional arrangements as drivers of risk and cuts across many sectors including health, education and the environment. Though a voluntary non-binding agreement, it sets global targets for disaster risk reduction.

Sustainable Development Goals

The Sustainable Development Goals (SDGs) follow from the Millennium Development Goals, a set of eight international development goals with specific targets that were to be achieved by 2015. The SDGs consist of 17 goals and 169 targets. Given that disasters hinder economic growth, affect poverty levels and result in human suffering,

[57] (UNISDR, 2015).

Box 4: Sendai Framework for Disaster Risk Reduction 2015–2030

Goal:

Prevent new and reduce existing disaster risk through the implementation of integrated and inclusive economic, structural, legal, social, health, cultural, educational, environmental, technological, political and institutional measures that prevent and reduce hazard exposure and vulnerability to disaster, increase preparedness for response and recovery, and thus strengthen resilience.

Four priorities for action:

1. Understanding disaster risk
2. Strengthening disaster risk governance to manage disaster risk
3. Investing in disaster risk reduction for resilience
4. Seven global targets:
   a) Substantially reduce global disaster mortality by 2030, aiming to lower the average per 100,000 global mortality rate in the decade 2020–2030 compared to the period 2005–2015.
   b) Substantially reduce the number of affected people globally by 2030, aiming to lower the average global figure per 100,000 in the decade 2020–2030 compared to the period 2005–2015.
   c) Reduce direct disaster economic loss in relation to global gross domestic product (GDP) by 2030.
   d) Substantially reduce disaster damage to critical infrastructure and disruption of basic services, among them health and educational facilities, including through developing their resilience by 2030.
   e) Substantially increase the number of countries with national and local disaster risk reduction strategies by 2020.
   f) Substantially enhance international cooperation to developing countries through adequate and sustainable support to complement their national actions for implementation of the present Framework by 2030.
   g) Substantially increase the availability of and access to multi-hazard early warning systems and disaster risk information and assessments to people by 2030.

The full text is available at www.unisdr.org.

resilience to climate change and natural disasters has emerged as a key concept in the SDGs. Managing disaster risks is explicitly mentioned in the targets of four development goals. Such increasing attention to disaster risk management within the development area reflects a growing recognition that effective disaster risk management is required to achieve sustainable development.

UNFCCC Climate Change Agreement

Climate change will affect disaster risks through increases in the frequency and severity of some weather and climatic hazards, and through increases in the vulnerability of communities, particularly through ecosystem degradation, reductions in water and food availability, and changes to livelihoods. In December 2015, 196 countries came together at the COP 21 to negotiate the Paris Agreement, an international agreement on climate change. It sets the goal to limit global warming to less than 2°C compared to pre-industrial levels and to "pursue efforts" to limit the temperature increase to 1.5 °C. In terms of adaptation, the agreement establishes the global goal to enhance adaptive capacity, strengthen resilience and reduce the vulnerability to climate change, with a view to contributing to sustainable development. To minimize loss and damages associated with the adverse effects of climate change, including extreme weather and slow onset events, the agreement highlights early warning systems, emergency preparedness, comprehensive

Table 1: Components of disaster risk reduction in the Sustainable Development Goals (SDGs)

	Proposed Goal	Target
Goal 1:	End poverty in all its forms everywhere	1.5) By 2030, build the resilience of the poor and those in vulnerable situations and reduce their exposure and vulnerability to climate-related extreme events and other economic, social and environmental shocks and disasters
Goal 2:	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	2.4) By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality
Goal 11:	Make cities and human settlements inclusive, safe, resilient and sustainable	11.5) By 2030, significantly reduce the number of deaths and the number of people affected and significantly decrease the direct economic losses relative to gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations 11.b) By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels
Goal 13:	Take urgent action to combat climate change and its impacts	13.1) Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries

risk assessment and risk insurance facilities as some of the key areas for action. The agreement strongly urges developed country Parties to scale up their level of financial support to provide $100 billion annually by 2020 for both mitigation and adaptation, with a significant increase in adaptation finance from current levels. There is therefore an opportunity to ensure that DRM is integrated into climate finance mechanisms, of which an increasing proportion is being directed towards adaptation.

World Bank Group President Jim Yong Kim and African Union Commission chair Dr. Dlamini-Zuma sign new African Union Commission World Bank cooperation agreement. Credit: The World Bank Group.

2.2 REGIONAL CONTEXT

In 2004, the African Union first demonstrated its commitment to DRM by adopting the *Africa Regional Strategy for Disaster Risk Reduction*. The strategy's overarching aim is to contribute to sustainable development and poverty eradication

by facilitating the integration of Disaster Risk Reduction (DRR) into development. The strategy recognizes that interventions are best conducted at the regional, national and local levels. It therefore calls for initiatives at the country and regional levels along six core objectives: (i) Increase political commitment to DRR; (ii) Improve identification and assessment of disaster risks; (iii) Enhance knowledge management; (iv) Increase public awareness; (v) Improve governance of DRR institutions; and (vi) Integrate DRR into emergency response management.

The 1st African Ministerial Conference on DRR (2005) adopted the Programme of Action for the Implementation of the Africa Regional Strategy for DRR (2005–2010). The Extended Programme of Action (ePoA) for the Implementation of the Africa Regional Strategy for Disaster Risk Reduction (2006–2015) was subsequently adopted at the 2nd African Ministerial Conference on DRR in 2010 to align the Strategy with the Hyogo Framework for Action. The ePoA sets out strategic areas of intervention and identifies priorities for the regional level. The African Union set up the Africa Working Group for DRR (AWG) to support the implementation and supervision of the ePoA. The Sendai Framework has triggered a process for aligning the regional and national strategies for DRM. The 4th AWG in July 2015 adopted the Yaoundé Declaration requesting the Africa Union to lead this process. The Regional Economic Communities are also in the process of updating their Regional DRM Plans of Action to bring them in line with the Sendai Framework.

The current strategy calls on national governments to lead the process of developing risk reduction capacities and integration of DRM into sustainable development. Ultimate responsibility for implementation of the strategy rests withinin national governments. The national institutional arrangements for DRM are different across the region. National authorities are working under various ministries such as interior, defense, agriculture and local governments, and at times under the prime minister. While DRM policies and frameworks are increasingly shifting from an ex-post to an ex-ante approach, most of them still focus on disaster response. Sub-national and local governments are often responsible for implementing DRM policies at a local level, mostly without sufficient financial and technical resources. Although progress has been achieved at establishing policies and frameworks at regional and national levels, implementation at local level has considerable room for improvement in Africa.

Regional Economic Commissions (RECs) play an important role in interpreting the African Union strategy at the regional level and facilitating implementation at the national level. All eight AU-recognized RECs,[58] as well as three RECs[59] not recognized by the AU, have included DRM in their work plans. UNISDR's status report (2014) describes DRM-related activities undertaken by several regional institutions and

[58] The AU recognizes the following eight RECs: Arab Maghreb Union (UMA); Common Market for Eastern and Southern Africa (COMESA); Community of Sahel-Saharan States (CEN-SAD); East African Community (EAC); Economic Community of Central African States (ECCAS); Economic Community of West African States (ECOWAS); Inter-Governmental Authority on Development (IGAD); and Southern Africa Development Community (SADC).

[59] RECs not formally recognized by the AU: International Conference on the Great Lakes Region (ICGLR); Indian Ocean Commission (IOC); and League of Arab States (LAS).

programs,[60] most of which provide data management or weather, climate and early warning services. The RECs were associated in the formulation of the African Regional Strategy and ePOA, and continue to support the alignment of sub-regional plans of action with the Sendai Framework.

Economic Community of West African States (ECOWAS) sets an example in regional collaboration by leading the policy dialogue on DRM. Through its technical centers, and in collaboration with the Permanent Interstate Committee on Drought Prevention (CILSS), it provides leadership to several regional initiatives. In spite of regional, sub-regional and national level interventions, the prevention and mitigation of, and preparedness for natural hazards remains an emerging issue in the policy agenda of many African governments. DRM and climate change adaptation are only partially translated into policy frameworks, and investments in ex-ante risk reduction measures are not yet fully mainstreamed.

Regional cooperation is critical not only at the policy level but also at the technical level. This is particularly crucial for the development of harmonized risk evaluation products, early warning systems, pooling of insurance and risk transfer products and for the management of water-, weather- and climate-related risks. Regional coordination and cooperation ensure direct and indirect benefits of quality and economies of scale, resulting from leveraging of expertise, capacity, resources and information and from integrating international, regional and national centers for data analysis and interpretation. Regional cooperation among hydro-meteorological services significantly benefits the quality of weather and hydrological forecasting and production of early warning services, particularly for trans-boundary hazards and entities (such as drought, cyclones and trans-boundary river basins).

Community leaders receive training for the newly implemented early warning system in the White Volta region of Ghana.

Regional climate centers play a pivotal role by providing weather and climate information. Improved access to global and regional products strengthens member states' national forecasting and early warning information. These

[60] The regional organizations include: The African Centre of Meteorological Applications for Development (ACMAD); Africa Monitoring of the Environment for Sustainable Development (AMESD); Agro Meteorology and Operational Hydrology (AGRHYMET)/(CILSS); The International Commission of Congo-Oubangui – Sangha Basin (CICOS); ECOWAS Early Warning and Response Network (ECOWARN); IGAD Climate Prediction and Application Centre (ICPAC); Regional Climate Output Forum (RCOF); Regional Centre for Mapping of Resources for Development (RCMRD); The Sahara and Sahel Observatory (OSS).

technical centers include: IGAD Climate Prediction and Applications Centre (ICPAC) in Nairobi, Kenya; SADC Drought Monitoring Centre (SADC DMC) in Gaborone, Botswana; CILSS-AGRHYMET Regional Centre in Niamey, Niger; and African Centre of Meteorological Applications for Development (ACMAD), also in Niamey. In recent years, these centers have closely linked their programs to DRM.

River Basin Organizations are taking on an increasingly important role. Africa has the largest number of trans-boundary river basins in the world, with the Nile, Niger, Senegal, Zambezi, Congo and Volta Rivers and Lake Chad as the region's primary arteries of growth. Many of the respective river basin organizations, such as the Lake Chad Basin Commission (LCBC), Senegal River Basin Authority (OMVS), Volta Basin Authority (VBA), Niger Basin Authority (NBA), Lake Victoria Basin Commission (LVBC), Nile Basin Initiative (NBI), Lake Tanganyika Authority, etc., are actively working toward better managing floods along these waterways and partnering with the World Bank. This is done in partnership with the Cooperation in International Waters in Africa (CIWA) Trust Fund.

Chapter 3

World Bank Support to Manage Disaster Risks and Make Strong Investments

The World Bank's Africa Strategy[61] establishes 'vulnerability and resilience' as one of the three overarching themes of the strategy. It rightly notes that 'Natural disasters (…) are predicted to increase in the future as the effects of climate change begin to be felt. Climate change is likely to lead not only to increases in variability in weather, but also to slow-onset changes such as warmer temperatures, rising sea levels and desertification, all of which are likely to lead to increased chronic poverty and vulnerability.' The Strategy document commits the World Bank to support 'Responses to the adverse impact of future climate change are diverse, and start with enhancing the ability of African countries to cope with current variability. This includes better hydro-meteorological services, establishment of early warning systems, adoption of preparedness and emergency response plans, upgrading and enforcing building codes and infrastructure standards, and testing or scaling up risk sharing or risk pooling mechanisms (including insurance, contingent financing, catastrophe-related bonds)'.

World Bank support for DRM in Africa has consistently grown in the last 4 years. This can be seen both in the portfolio of investment project financing and development policy operations, and in non-lending technical assistance, knowledge sharing, capacity building and partnerships. This chapter presents an overview of such engagements.

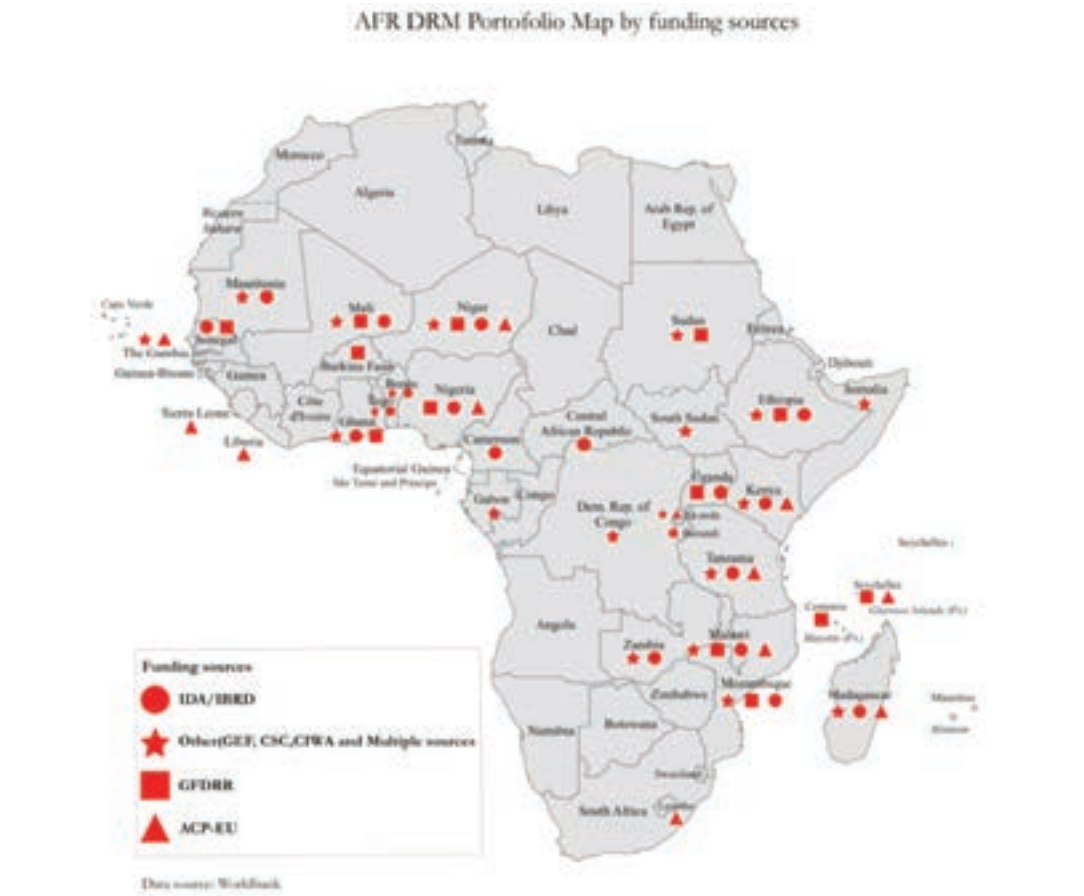
3.1 TECHNICAL ASSISTANCE AND CAPACITY BUILDING TO MAINSTREAM DRM IN DEVELOPMENT POLICIES

DRM is frequently integrated in country dialogue, including Systematic Country Diagnostics and Country Partnership Frameworks (CPFs). A survey undertaken in 2012 showed that 11 out of 30 Country Partnership Strategies (CPS) in the region identify DRM as a strategic pillar or priority. For example, the current Ethiopia CPS has "Enhancing resilience and reducing vulnerabilities by improving delivery of social services and developing a comprehensive approach to social protection and risk management" as a goal.

45 Technical Assistance (TA) and capacity building programs support 22 African countries to support forward-looking DRM. Figure 10 shows a map with the existing TA and capacity building portfolio in Africa. This stretches across four main areas:

[61] Africa's Future and the World Bank's role in it, World Bank, 2011.

Figure 10: Africa region DRM portfolio by funding source



- Policy development and institutional strengthening
- Risk information
- Preparedness and early warning
- Risk financing

The programs include a wide range of activities such as strategy formulation; policy development; institutional capacity building; quantitative probabilistic risk assessments; feasibility studies for disaster forecasting and early warning systems; modernizing hydro-meteorological services; supporting safer school construction; developing risk financing solutions; and rapid post-disaster needs assessments. This work is mainly financed by GFDRR through ACP-EU NDRR and ADRF, Japan DRM, and other programs. These engagements often leverage large investments in risk reduction.

Policy development and institutional strengthening

DRM specialists strategically housed in country offices are instrumental in supporting governments to integrate DRM in their development planning and policies. Such engagements

have led to robust country dialogue on DRM and helped build capacity, such as:

- In Malawi, the World Bank team supported the government on key DRM initiatives in social protection and water resources sectors. This has resulted in improvements in forecasting and risk modeling, leading to better irrigation and early warning for flood and drought management.
- Ethiopia government adopted a DRM policy in 2013, which prioritizes disaster preparedness and establishes a multi-sector approach for resilient development. The World Bank has supported this major shift from a reactive to a proactive approach to DRM in Ethiopia. Furthermore, it is helping the implementation of the *DRM – Strategic Programme and Investment Framework* under the newly constituted DRM Coordination Commission under the Prime Minister.

Risk Information

Better understanding of disaster risk is a priority. World Bank supports disaster risk and vulnerability assessments to understand the impacts of floods, coastal erosion, drought, landslides, cyclones, volcanos and earthquakes. This information guides the design and scope of risk reduction and preparedness investments.

- In southeastern Nigeria, in response to landslides and heavy gully erosion in September 2011, the Bank's Africa DRM Team conducted a joint technical mission to assess impacts and formulate the terms of reference for a dedicated erosion and landslide hazard risk assessment strategy.
- In Senegal, a study highlighted that almost 40 percent of the population in peri-urban Dakar has settled in areas with significant hazard potential, especially inland flooding. This initiated a $55.5 million flood risk reduction project benefiting 1.2 million people in two suburbs of Dakar.
- In Mozambique, the Safer Schools Program supported a comprehensive hazard mapping exercise, a vulnerability assessment of more than 600 schools, technical seminars on construction and administration, as well as the development of a technical manual, for safer school construction.
- In Madagascar, the World Bank supported the Government in developing new building codes in 2010. This led to the development of transport and irrigation infrastructure safety code. These codes significantly reduce the vulnerability of the built environment.

In parallel to the technical work, advocacy and building communities of practice is a central part of this engagement. As part of the ACP-EU financed Africa Disaster Risk Finance (ADRF) initiative, the Understanding Risk & Finance Conference in Addis Ababa (2015) convened over 500 experts and decision makers from African governments, civil society, academia, development partners and the private sector. This network of practitioners allows opportunities for peer learning and knowledge exchanges on innovative approaches to managing risk in Africa.

Preparedness and early warning

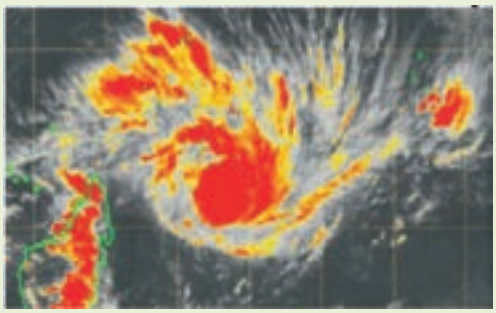
Multi-hazard early warning systems and preparedness have proven to be effective in saving lives and reducing the economic impacts of disasters. Early Warning Systems require reliable hydro-meteorological information, effective contingency plans and risk communication with affected communities. The World Bank supports countries in establishing and strengthening early warning systems and preparedness.

- In Malawi, an analysis of the country's disaster risk, notably the Lower Shire flooding informed a hydrological and socio-economic profile. This helped develop a national risk-modeling framework to better quantify disaster risks and provide scientific outputs to decision makers. This gave a head start to the 2015 PDNA and allowed a quicker response. The framework mainstreams DRM in national development strategies and creates a culture of emergency preparedness.
- In Ghana, a state-of-the-art flood forecasting and early warning system was set up as part of the Government's push for better management of floods, after the devastating flooding in the White Volta River Basin in October 2010. By combining meteorological and river modeling data, the system now operates as an early warning tool, generating vital information for the authorities.
- Several organizations in Africa manage platforms for exchanging disaster-related information (CILSS, ECOWAS, ACMAD and river basin authorities). However, there is a need to expand the potential for early warning for rapid onset hazards—such as river and flash floods, wind and landslides, beyond food security monitoring and preparedness related to drought and locust hazards.

Risk financing

A number of regional and national initiatives in disaster risk financing and insurance are underway. Country notes have been produced for Ethiopia, Malawi, Mozambique, Senegal and Togo. In addition, technical dialogue has been initiated with a number of countries to improve financial protection against disasters. Diagnostic work has been done to identify scope for public-private sector partnerships for agricultural insurance in Kenya and Senegal. IFC's Global Index Insurance Facility is initiating a new program for Africa that will work through local insurance companies to engage financial institutions, input suppliers and agribusiness to help increase insurance coverage and access to credit for smallholder farmers. At the regional level, the African Risk Capacity Insurance Company Limited, which has a complementary relationship with the World Bank, launched the first pooled insurance cover for drought in 2015.

Box 5: Indian Ocean Islands Risk Assessment & Risk Financing Initiative



The Indian Ocean Islands (IOIs) are working to reduce their vulnerability to natural disasters in line with the Mauritius Strategy for the Further Implementation of the Program of Action for the Sustainable Development of Small Island Developing States (SIDS) 2005-2015. To complement this, the Bank's Africa DRM Team, GFDRR and the DRFI Program are working jointly with the Indian Ocean Commission (IOC) to develop a detailed risk assessment platform—similar to the Pacific Catastrophe Risk Assessment and Financing Initiative (PCRAFI)—to guide risk management interventions, including financial protection strategies. The work to better understand the risks faced by the Indian Ocean Island (IOI) states will be used as a basis for providing technical assistance and capacity building on risk financing under the Africa Disaster Risk Financing Initiative. The hazard, exposure and risk information will be complementary to other data sources such as the Africa Risk Capacity's (ARC) tropical cyclone modelling. Data produced by the initiative will also be used for other DRM applications, such as preparedness and prioritizing of risk reduction investments.

Disaster risk financing and insurance is a new area of interest in Africa. There are many options for development of financial resilience. These include strategies for financial protection at the sovereign level to help governments meet their contingent liabilities; the promotion of catastrophe risk insurance markets for businesses and households; and the integration of risk financing and insurance principles in social protection schemes to provide a crucial financial buffer to the poorest households through rapidly scalable safety nets. The development of risk information and tools for financial risk analytics is crucial to enable evidence-based decision-making by countries. African countries have identified this as a priority area to build financial resilience.

3.2 FINANCING LONG-TERM DISASTER RESILIENCE

An analysis of the Africa portfolio identified a total of $5.8 billion in terms of direct contributions and co-benefits to DRM/CCA, which represents 10.8 percent of the total portfolio. For the purpose of the analysis, the project portfolio is classified into five categories.

1. ***Post-disaster reconstruction*** – 100 percent of the project amount contributes to DRM/CCA, with a focus on post-disaster reconstruction.
2. ***Disaster prevention/preparedness/climate adaptation*** – 100 percent of the project amount contributes to DRM/CCA, with no connection to the occurrence of a specific disaster.
3. ***Other operations with high focus on resilience*** – Between 25 and 80 percent of the project amount contributes to DRM/CCA.
4. ***Other operations with limited focus on resilience*** – Between five and 20 percent of project amount contributes to DRM/CCA.
5. ***Other operations with minimal contribution to disaster resilience*** – Between 0 to 2 percent of project amount contributes to DRM/CCA.

Overall, 16 active investment projects out of 565 fall into category 1 and 2. The highest contribution to DRM/CCA is category 3, namely "Other operations with high focus on resilience," with a total of $2.7 billion. Projects in categories 3, 4 and 5 provide significant support to DRM/

Figure 11: Africa portfolio - DRM/CCA Contribution by category ($ million; Jan 4th, 2016)

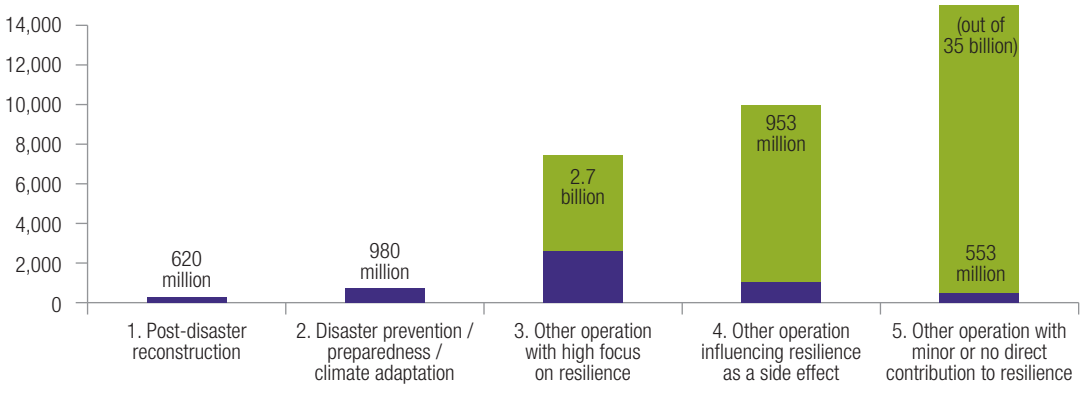
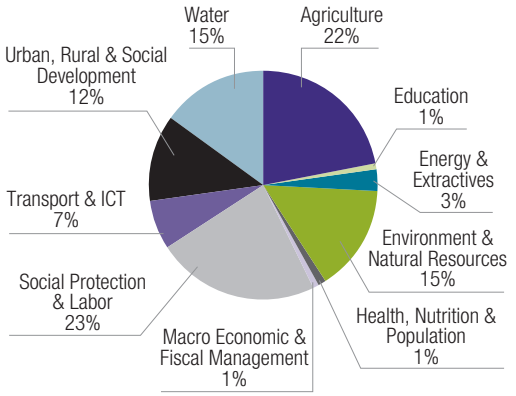


Figure 12: DRM/CCA contributions by Global Practice (AFR portfolio, Jan 4th, 2016)



CCA—these were not included in previous analyses of DRM engagements such as IEG-MIGA (2006), IEG 2012 and the Sendai Report (2012).

The DRM/CCA contributions are provided through a range of engagements in different sectors, mainly: (i) social protection; (ii) agriculture; (iii) water; (iv) social, urban, rural and resilience; and (v) environment and natural resource management. These sectors together provide 88 percent of the contributions to DRM/CCA.

The sectoral co-benefits shows a high degree of mainstreaming DRM in World Bank operations in Africa. An illustrative overview of multi-sector engagement on DRM activities is as follows:

Social protection

Social protection programs support building safety nets for the vulnerable populations such as rural, drought-affected and chronically food insecure communities. One of the largest DRM-related World Bank projects is the Productive Safety Net Project in Ethiopia, which substantially reduced the number of drought-affected population through early action.

- Ethiopia Productive Safety Net Program (PSNP) improves food security for poor people and increases their resilience in the face of economic and climate-related crises. In addition to cushioning vulnerable rural households during crises such as the drought in the Horn of Africa, PSNP provides productive assets for developing sustainable livelihoods.
- The Sahel Adaptive Social Protection Program supports activities in Burkina Faso, Chad, Mali, Mauritania, Niger and Senegal to help poor and vulnerable households reduce the impact of climatic change and other shocks, build household and community resilience and foster access to income-earning opportunities.

Agriculture

In Africa, agriculture is the most important sector requiring investments and technical assistance to overcome drought, floods and pest-induced impacts on livestock and crop production:

- In the Horn of Africa, the Regional Pastoral Livelihoods Resilience Project contains a component that focuses on drought risk mitigation.
- In Tanzania, the Accelerated Food Security Project improves farmers' access to critical agricultural inputs, providing customized assistance to enhance the resilience of vulnerable households, while coping with the inter-annual climate variability (flood and drought).
- In Zambia, investments in the Irrigation Development and Support Project bring the private sector, the Government and farmers' cooperative together to enable critical investments to secure irrigated production and counter recurrent flooding and droughts.

- The Niger Community Action Project for Climate Resilience is a combination of small investments managed by local authorities to mainstream climate resilience in sectoral policies and development planning for the poor and vulnerable households with adaptive social protection.

Water

Better flood management and water security requires substantial investments in structural and non-structural measures, such as:

- Cameroon Flood Emergency Project finances the rehabilitation of key hydraulic infrastructure and improves disaster preparedness in target areas.
- Kenya Water Security and Climate Resilience Project increases the availability and productivity of irrigation waters and enhances the institutional framework for water security and climate resilience. In addition, the project supports the national disaster response plan for the water sector.
- Malawi Shire River Basin Management Program finances disaster forecasting and risk modeling to improve flood and drought risk management. The Malawi Floods Emergency Recovery Project (IDA CRW) supports the sustainable restoration of agricultural livelihoods, enhanced food security, resilient reconstruction of critical public infrastructure, restoration of services, and investments in longer-term risk reduction.

Environment and natural resource management

Climate variability, land degradation and inadequate watershed management are some of the main drivers of disaster risk in Africa. Investing in strategies to address land degradation and erosion, or stabilizing landslide-affected slopes has long-term financial benefits.

- Nigeria Erosion and Watershed Management Project aims to reduce vulnerability to soil erosion in targeted sub-watersheds. The multi-sector project finances activities to prevent and reverse land degradation and focuses on gully erosion sites that threaten infrastructure and livelihoods.
- In Togo, the Integrated Disaster and Land Management Project, aims to strengthen the institutional capacity of institutions to manage the risk of flooding and land degradation in rural and urban areas. It focuses on sustainable land management in specific landscapes and climate vulnerable areas throughout the country.

Urban

In the fastest urbanizing continent, urban infrastructure development and risk sensitive urban planning often lag behind. Notably, urban flood risk management, and planned investments in drainage systems should be a high priority along with building back better projects.

- Niger DRM and Urban Development Project aims to improve Niger's resilience to natural hazards by strengthening Government capacity for urban development and DRM as well as strengthening its ability to respond effectively to a crisis or emergency.
- In Benin, the Emergency Urban Environment Project contains a flood management and disaster preparedness component.
- In the Central African Republic, the Emergency Urban Infrastructure Rehabilitation and Maintenance Project has a component that focuses on flood risk mitigation.

- The Senegal Storm Water Management Project addresses chronic flooding in the areas around Dakar, with a clear identification of underlying risk and investments to improve the existing drainage infrastructure. Beneficiaries are directly engaged in the monitoring and maintenance of the infrastructure.

Education

The education sector is crucial for building resilience at all levels, notably by setting standards for safer schools which can resist floods and cyclones and by raising awareness for DRM and implementing education programs for all levels of society.

- The Mozambique Safer Schools Initiative developed guidelines to build schools with resilient building codes. This will make schools resilient to cyclones, floods and earthquakes. The post-disaster assessments, field missions, international guidelines and blueprints have helped integrate structural and non-structural risk reduction elements in the design and community awareness.

Poverty reduction and economic management

Strengthening countries' fiscal and economic policies is an important element of the World Bank's country dialogue. Poverty reduction and economic management projects have contributed to mainstreaming DRM in national and sector policies, addressing risk financing strategies and covering contingent liabilities.

- In Seychelles, the DRM Development Policy Loan (DPL) with a Catastrophe Deferred Drawdown Option (CAT DDO) will complement the country's risk financing strategy by establishing a contingent line of credit that can be triggered by a disaster event.
- In the Comoros, a Development Policy Operation (DPO) with DRM policy triggers will mainstream DRM into national policy.

In light of the IDA17 climate and DRM agenda, the World Bank will strengthen strategies, provide non-lending technical assistance to strengthen institutions, increase lending and look into options for retrofitting existing projects and portfolios. There will also be possibilities for adding contingent components or utilizing the immediate response mechanism in eligible cases.

3.3 RAPID RESPONSE TO EMERGENCIES

The World Bank plays a key role in supporting countries in disaster recovery and reconstruction. In the aftermath of disasters, the World Bank provides technical support and capacity building for PDNAs, which often leads to larger World Bank investment projects for reconstruction and long-term recovery.

The World Bank supports the assessment of disaster impacts using the PDNA methodology.[62] These assessments help in i) quantifying the economic and social impact of the disaster events; and ii) preparing a roadmap for forward-looking recovery, reconstruction and resilience programs in the affected countries. This builds upon the 2008 Joint Declaration on Post-Crisis Assessments and Recovery Planning between the World Bank, United Nations Development Programme (UNDP) and the European Union to improve the coordination of support offered to

[62] There are different types of post-disaster assessments based on the scope, methodology used and partners. For example, DaLA is Damages and Loss Assessment and JDLNA is Joint Damage, Loss and Needs Assessment.

Table 2: An overview of damages and losses from recent PDNAs in Africa

Event	Country	Year	People affected (*Thousands*)	Damages (*$ million*)	Losses (*$ million*)	Recovery/ Reconstruction Needs (*$ million*)
Cyclone	Madagascar	2008	350	174	159	155
Floods	Namibia	2009	350	136	78	622
Floods	Burkina Faso	2009	150	102	33	266
Floods	Senegal	2009	485	56	48	204
Floods	CAR	2009	15	6	2.5	36
Earthquake	Malawi	2010	18	5	1	—
Floods	Benin	2010	156	162	100	—
Floods	Togo	2010	83	28	7	44
Heavy rains	Lesotho	2011	580	28	26	94
Drought	Kenya	*2008–11	**3700	*8	*11300	*1770
Drought***	Uganda	****2010–11	**809	45	1299	173
Floods	Comoros	2012	150	19	-	—
Floods	Nigeria	2012	3891	9500	7300	7100
Floods	Seychelles	2013	5	5	3	30
Floods	Sudan	2013	340	134	-	—
Floods	Burundi	2014	20	4	-	107
Floods and storms	Mozambique	2015	326	371	-	490
Floods and storms	Madagascar	2015	300	119	-	279
Floods	Malawi	2015	1101	286	48	494

* This assessment covered the four-year period 2008–11; ** in August 2011; *** Rainfall variability assessment; **** This report covered the two-year period 2010–11;

governments affected by crises. In recent years, the World Bank's Africa DRM Team has facilitated just-in-time assessments, full-length PDNAs and smaller fact-finding assessments and trainings in response to many disasters affecting Africa. Table 2 provides an overview of the findings of a number of recent PDNAs.

World Bank has supported many post-disaster investment operations informed by Rapid Assessments and PDNAs across Africa. Some examples are as follows:

- In response to the 2011 Horn of Africa drought crisis, the World Bank committed $1.8 billion to support safety nets and food security. A 6–12 month initial phase of immediate relief focused on response-type approaches to support food and nutrition, water supply, sanitation and health. This initial phase was supplemented with $190 million from the World Bank Crisis Response Window.
- In response to the 2009 floods in the Central African Republic, $5 million additional

financing was made available from an exceptional natural disaster-related allocation to supplement the Emergency Urban Infrastructure Rehabilitation and Maintenance Project. The project includes investments in water supply, flood reduction and mitigation, solid waste management and urban roads, including TA for institutional strengthening.

- Additional financing for Malawi under the Malawi Social Action Fund (MASAF) to support 15 disaster-affected districts through: (i) increasing the existing public works program; and (ii) reconstructing and retrofitting earthquake-damaged educational infrastructure. For the educational reconstruction component, $4 million was added to the MASAF project.
- In Benin, a $50 million IDA Emergency Urban Environment Project builds upon the recommendations of a 2010 PDNA and supports the rehabilitation of the drainage network in flood-affected Cotonou and the establishment of a flood risk early warning system.
- Following the March 2012 floods in Madagascar, transport and community infrastructure were rehabilitated using a *build back better* approach. This was carried out in compliance with the climate resilience norms for transport infrastructure developed by the government with GFDRR support.

The World Bank's Africa DRM Group has established an Emergency Monitoring and Advisory System (EMAS) to coordinate rapid Bank-wide emergency response (Box 6).

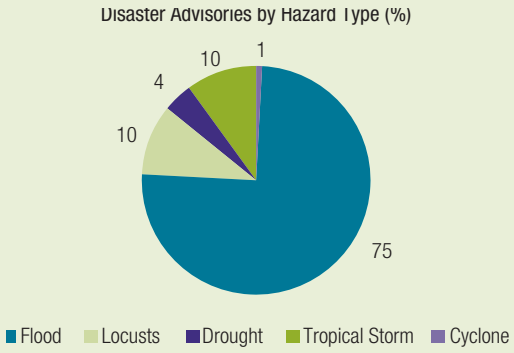
3.4 FOSTERING KNOWLEDGE AND INNOVATION

Technology is a driver of new development solutions for DRM:

- **Mobile phones:** Africa is the fastest growing market in mobile phone subscriptions at over 30 percent a year and was expected to

Box 6: Africa DRM Group Emergency Monitoring and Advisory System

In response to a need for a comprehensive advisory system that reaches not only key decision makers in the management structure of the World Bank but also country-based staff and Bank security operation, the Africa DRM Group established the Emergency Monitoring and Advisory System (EMAS) in August 2013. The main objective of EMAS is to provide an effective emergency monitoring system, which informs all relevant Bank staff of recent, imminent or ongoing disasters in Africa. EMAS functions using a network of 58 country-based DRM focal persons located in 48 countries throughout Africa. Two types of advisories are issued: i) an event warning for imminent disasters such as floods or cyclones plus slow-onset disasters such as drought; and ii) a situation update during and following a disaster which includes the number of people affected, damage overview, government response, media reports and anticipated Bank actions, if any. Since 2013, about 100 advisories have been issued.



reach one billion subscriptions by 2015.[63] Just as the reach and affordability of the mobile phone is growing fast, so are its capabilities and the solutions it can bring about. In Madagascar, for example, the National Disaster Management office not only sends out an advance warning ahead of a cyclone, but also collects post-disaster information via SMS from those affected. This helps a better and more accurate understanding of damages and losses. This two-way communication via mobile devices is also known as crowdsourcing. A similar system is being established in Mozambique. It also directs community-driven charitable aid in times of crisis. During the 2013 floods in Sudan, a local charity used crowdsourcing to channel aid to the most affected areas within Khartoum (where there is a mobile Internet connection). This resulted in quick, community-based assistance for those most in need.

- **Geospatial mapping and open source:** The past five years have witnessed a geospatial revolution of freely available data such as Google and Open Street Map, plus new standards for web hosting and the ease of automated geocoding. This is supported by crowdsourcing using smart phones with navigation technology (GPS). Out of one billion mobile phone subscriptions in Africa, 100 million users have smart phones, a number that is expected to double by 2017.[64] The World Bank has taken an open data initiative to promote transparency, accountability and informed decision-making. For example, in the Malawi Shire River Basin Management Program, the Government, the World Bank and its partners have supported an online platform to ensure that the data from a number of past or ongoing projects is maintained in an online platform. This ensures that information remains accessible and useful to the Government, public and other key stakeholders. When open source data is combined with geospatial maps, a clearer picture emerges of areas most at risk and helps planners at the Government and community level better prepare for disasters.
- **Innovative partnerships:** Leveraging new technology will help make risk data available to support decision-making for building resilience. "Open Data for the Horn" is a data sharing platform initiated by the Regional Center for Mapping of Resources for Development (RCMRD) together with the World Food Programme (WFP), UN OCHA, NASA SERVIR, and ITHACA.[65] This platform helped coordinate the response to the Horn of Africa drought (2011) by providing free access to over 160 datasets. In Mozambique, LIDAR (laser light directed radar) stations have been constructed as part of the World Bank-supported DRM project. These stations allow for the production of high-resolution maps of areas exposed to hazards, especially floods. The maps are used to predict flooding and assist local authorities in better planning for urban development.

Technology supports innovative risk assessment across the region. The process of disaster risk evaluation in developing countries requires investments in the collection, analysis and dissemination of both geophysical and

[63] Source: GSMA 2014.
[64] For more information, see Jidenma (2013).
[65] For more information, see http://horn.rcmrd.org.

Box 7: Innovations in Risk Assessment and Risk Communication

New technologies support new approaches in data collection and sharing:

- Crowdsourcing – collecting data from the citizens – can be a powerful tool to serve risk assessment. Examples of crowdsourcing risk information can be seen in *ushahidi,* crisis mappers and crowd-sourcing networks.
- Community mapping engages local residents with free or low-cost tools and collaborative mapping platforms such as Open Street Map. Successful examples include Humanitarian Open Street Map, Map Kibera and Ramani Tandale, which utilize local user input to map communities.
- Remote Sensing Technologies – Rapid and comprehensive satellite and drone-based mapping is increasingly affordable and available for both ex ante and post-disaster DRM usage.
- In-situ Monitoring – Sensors in water points, rivers and weather stations now report critical environmental data via Internet and/or mobile technology (such as SMS or GPRS), leading to cost reductions and increased efficiency in collecting in-situ real-time data for monitoring and analysis of hazards and critical infrastructure.

socioeconomic data. New technological innovations are assisting in collecting such data in a more efficient manner (Box 7).

3.5 BUILDING EFFECTIVE PARTNERSHIPS

The World Bank Africa DRM Group has established a broad network of global and regional partnerships. These help deliver sustainable solutions for DRM across the continent, while fostering regional collaboration, facilitating access to global knowledge and accessing funding from global programs. Strong partnerships with Africa's regional organizations, the United Nations (UN), the Africa Caribbean Pacific (ACP) Group of States, the European Union (EU) and Japan build the foundations for engagement in Africa.

International partnerships

The ACP – EU Natural Disaster Risk Reduction Program finances significant work in the region. It was launched in 2011 with an EU-funded grant of $ 75.6 million, managed by GFDRR. As of October 2015, it has supported 38 projects in Africa, comprising more than half of its total portfolio. The program supports African countries and RECs in a wide range of areas, such as DRM policies, developing risk assessment tools, operational early warning systems, emergency preparedness and response capacities, post-disaster assessments, recovery planning and investments. In December 2013, based on the outcomes of the program, the EU approved an additional contribution of $55 million for strengthening operational capacities of African RECs and countries' to incorporate risk information in decision-making and financial resilience strategies against natural hazards, in the framework of the ACP-EU "Building Disaster Resilience to Natural Hazards in Sub-Saharan Africa" Program.

By working with UN agencies, the World Bank supports many initiatives on a continental, regional and national scale. Collaboration with the UN Office for Disaster Risk Reduction (UNISDR) supports high-level political advocacy processes such as the Africa Regional Platform for Disaster Risk Reduction. The World Bank partners with the Food and Agricultural Organization (FAO) and WFP to respond to drought and food insecurity in Africa**.** For example, it partnered with FAO to implement

a $9 million grant to support drought recovery in Somalia. Together with WFP, the Livelihoods, Early Assessment and Protection (LEAP) system was developed allowing a better forecast of food insecurity. Together with UN-HABITAT, the Disaster Mitigation and Sustainable Recovery Centre for Southern Africa (DIMSUR) – co-funded by the ACP-EU NDRR Program, was launched in June 2013 supporting the national authorities of Madagascar, Malawi, Mozambique and the Comoros in knowledge sharing and capacity development for increased urban resilience.

The World Meteorological Organization is World Bank's program partner in scaling up support to strengthen regional and national hydro-meteorological services. The WMO, with its members and regional centers, (and the African Development Bank's Clim-Dev Initiative of the African Union) are program partners in supporting the strengthening of national and regional hydro-meteorological services in Africa. The initiative is helping to improve weather and climate data collection and global models, improve early warning systems, build capacity and strengthen institutional frameworks for more effective climate and disaster resilience of communities and economies.

Regional partnerships

The World Bank engages in a wide range of regional partnerships to advance DRM in Africa. The African Union and its RECs play an important role in setting regional policies on DRM and supporting national governments to establish coherent DRM policies and coordinating platforms. In southern Africa, the World Bank collaborates closely with the Indian Ocean Commission (IOC) and the Southern African Development Community (SADC). Through SADC, the World Bank supports the regional agenda on resilience in the water sector, e.g. through a regional program on ground water management. In eastern Africa, the World Bank has collaborated with the Inter-Governmental Authority on Development (IGAD) since the 2011 drought in the Horn. IGAD has developed a regional strategy to strengthen sub-regional disaster preparedness and response capabilities, incorporating a regional program for DRM and providing leadership on drought management, resilience and growth. The World Bank and African Development Bank (AfDB) are working jointly on the Pilot Program for Climate Resilience (PPCR) projects, one of the main programs under the Climate Investment Funds, with Zambia, Mozambique and Niger as focus countries.

3.6 LESSONS LEARNED

Important lessons have emerged from the World Bank's work on DRM in Africa:

1. **Managing disaster risk is crucial to protect and improve livelihoods, save lives and ultimately reduce poverty**. The poorest are most vulnerable to disasters, which can destroy livelihoods and even push people into poverty. In addition, investments too often do not take into account disaster risk, leaving development gains vulnerable to natural hazards. For example, infrastructure and buildings are largely not built to resilient standards. Limited or obsolete water management infrastructure amplifies drought and flood risk.
2. **Enhanced understanding of underlying risk factors is crucial to inform evidence-based decision making at all levels.** Information on disaster risk is not readily available to most communities and decision makers in Africa, and there is relatively little public awareness and participation in disaster prevention and

response. Similarly, effective and timely weather and impact forecasts and early warnings from real-time hydro-meteorological systems rarely exist. There is a lack of quantitative assessments of risks to guide investments and policies. This gap should be addressed over time.

3. **Strong government capacity and ownership is critical. By investing in technical assistance and capacity building for DRM, the World Bank plays an important role in building resilience in Africa.** Establishing effective DRM systems requires systematic efforts to integrate proactive approaches in public policies and investment. Further investments are needed to build the evidence, and for monitoring and technical groundwork, such as collecting necessary risk information and developing risk-financing strategies. Moreover, this needs to be linked to large-scale investments in risk reduction.
4. **Countries are increasingly looking at the financial impacts of disasters on their budgets and populations.** Disaster risk financing and insurance is largely in its infancy throughout the continent with its benefits not yet fully utilized. But interest is strong and countries are looking for technical support to strengthen the resilience of the poorest and most vulnerable through the application of insurance principles and tools for social protection programs.
5. **Post disaster engagement presents an opportunity for engagement on risk reduction.** The aftermath of a disaster can bring an increase in resources and political will for reducing existing risk, preventing future risk, and providing opportunities to build back better and systematic DRM engagements.
6. **Regional leadership and integration are crucial to effectively reduce disaster and climate risks in Africa.** Institutions across the continent are often focused on response, not prevention. Where dedicated institutions exist, they often have limited capacity for risk reduction, coordination and implementation. Administrative structures are also constrained by inadequate technical and financial support. Strong regional leadership and capacity can support national institutions overcome these challenges.
7. **Early warning has proven to be a cost effective technique for reducing disaster impacts.** In many cases, when comparing structural and non-structural measures, such as dykes and levees with early warning systems, non-structural measures have proven to be more effective and cost efficient. Building end-to-end systems with targeted and reliable hydro-meteorological forecasts, a common operating platform and ensuring last-mile connectivity to the vulnerable population is essential.

Strategic Priorities – The Way Forward

This strategic framework is an important step in the implementation of the World Bank's strong commitment to DRM as a crucial element for eliminating extreme poverty and boosting shared prosperity in Africa, as formulated in the World Bank Strategy for Africa, *Africa's Future and the World Bank's Support to It,*[66] the Sendai Report,[67] *Turn Down the Heat,*[68] as well as the 2014 World Development Report, *Managing Risk for Development*. The challenge is now to put these commitments into practice by providing effective technical advice and sustainable investments in vulnerable countries.

The World Bank's engagement in DRM spans across five pillars of action, aligned with the guiding principles of global frameworks. The five-pillared framework is described below, followed by specific lines of operation and priority areas for engagement in the next four year period to increase the resilience of the Africa region to climate and disaster risks.

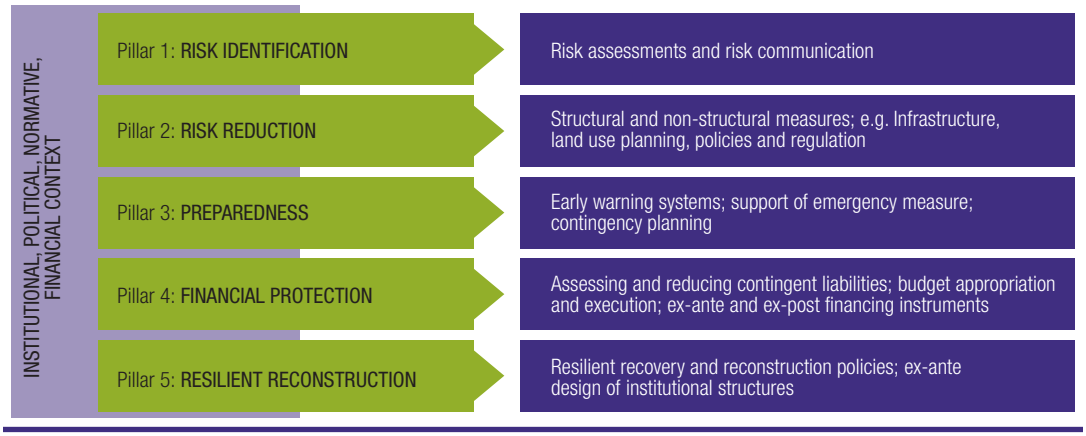
4.1 COUNTRY DISASTER RISK MANAGEMENT FRAMEWORK

To guide country engagements and investments in building resilience, the World Bank Africa region follows a comprehensive DRM framework. The framework is based on the World Bank's experience of working with countries to systematically improve their capacity to respond to and manage disaster risks. It has five pillars: (i) risk identification; (ii) risk reduction; (iii) preparedness; (iv) financial protection; and (v) resilient recovery (Figure 13).

- **Risk Identification:** Understanding the risks faced by governments and communities is the first step in managing risks. By quantifying risks and the potential negative impacts of natural hazards, risk assessments can help governments, communities and individuals make informed decisions.
- **Risk Reduction:** Accurate disaster risk information can shape development strategies and programs to reduce risk in the short and long term, using structural and non-structural measures. This information also helps develop training modules to build national and local DRM expertise.
- **Preparedness:** Not all risk can be prevented, making adequate preparedness essential. Effective early warning systems, adequately prepared crisis management structures and contingency plans are some of the

[66] World Bank, 2011.
[67] Development Committee Background Paper, Annual Meetings, Tokyo, 2012.
[68] World Bank series, 2012, 2013, 2014.

Figure 13: World Bank/GFDRR DRM Framework



most cost-effective measures to save lives and protect livelihoods.

- **Financial Protection:** Financial protection can help protect governments, businesses and households against the economic burdens of disasters. Governments can adopt disaster risk financing strategies to increase financial response capacity in the aftermath of a disaster while protecting long-term fiscal balance. Access to insurance can increase financial resilience in the society as a whole.
- **Resilient Recovery and Reconstruction:** Effective recovery is key to restore the livelihoods of affected communities and rebuild damaged infrastructure to a higher quality and standard. In addition, the aftermath of a disaster is often the starting point for a long-term engagement on vulnerability reduction. World Bank – Advancing the DRM Agenda in Africa.

4.2 OPERATIONALIZING THE STRATEGIC FRAMEWORK

Operationalizing the strategic framework requires the five pillars of action to be translated into actionable items along the lines of operation.. In cooperation with governments and development partners and in line with the World Bank's strategy for Africa, the World Bank will advance the DRM agenda along the five pillared framework in Africa around the following three lines of operation:

1. *Investments:* Systematically investing in long-term DRM for poverty reduction and climate adaptation, and continue assisting countries to respond to emergencies.
2. *Knowledge:* Enhancing the understanding and ability to manage disaster and climate risks, utilizing early warnings for early action, and enabling evidence-based decision-making through technical assistance and capacity building.
3. *Partnerships:* Fostering partnerships at the global, regional, national and local levels with governments, development partners, academia, private sector and civil society to promote and advance the DRM agenda across Africa.

Inter-linkages will be made across the three lines of operation to ensure that various activities are working in tandem and building upon each

other. For example, activities under *Knowledge* can serve as a catalyst for future *Investments* and leverage concerted action through *Partnerships*.

Within these lines of operation, the framework focuses on a set of specific priority areas that are presented below. These have been identified through consultation with governments and development partners, and stem from the current disaster risk context described in Chapter 1, regional priorities described in Chapter 2 and lessons learned and emerging trends for the region discussed in Chapter 3. During the implementation period of this strategic framework, these priorities will be periodically reviewed and adjusted to country demand and emerging needs.

Investments

- Modernizing Hydro-Meteorological Services
- Strengthening Financial Resilience
- Building Urban Resilience
- Mainstreaming Disaster Risk Management and Climate Adaptation
- Supporting Sustainable Recovery

Knowledge

- Enhancing the Understanding of Disaster Risks
- Helping Countries on Risk Financing
- Strengthening Institutional Capacity and Policy
- Developing Investment Plans for Climate and Disaster Risk Management
- Promoting Regional Cooperation for Disaster Risk Management
- Building Capacity to Respond and Recover from Disasters

Partnerships

- Leveraging Existing Partnership Platforms
- Strengthening Collaboration with Regional Economic Commissions
- Enhancing National and Local Level Engagements
- Deepening Cooperation with Development Partners

Investments

In line with the global and regional policy frameworks, such as the Sendai Framework, the World Bank will continue to broaden DRM investment operations beyond post-disaster emergency response to ex-ante risk reduction measures. Such investments will be integrated in long-term development planning to support poverty reduction and the boosting of shared prosperity. In the Africa region, areas of focus will include: strengthening hydromet services, strengthening financial resilience, building urban resilience, mainstreaming DRM and CCA across sector investments and supporting sustainable recovery.

- **Modernizing Hydro-Meteorological (Hydromet) Services**

  The World Bank has started the rollout of the *Regional Framework Program to Improve Hydromet Services in Sub-Saharan Africa: Strengthening Climate and Disaster Resilience"* in partnership with the World Meteorological Organization (WMO) and the African Development Bank. Launched in 2015, this framework program supports the strengthening of hydromet services, early warning systems and community-level preparedness activities in Africa. Its main objective is to equip countries with the infrastructure and capacity to provide timely, accurate and actionable weather, climate and hydrological forecasts and warnings.

  The program consists of three main components, including: (i) strengthening National Meteorological and Hydrological Services (NMHSs); (ii) community focused

end-user services to build preparedness, early warning and community awareness; and (iii) knowledge and advisory services. The component to strengthen NMHSs will include improved infrastructure, service delivery, capacity building, strategy and management support, and policy-institutional reforms. Activities will include strengthening of hydromet information management systems through institutional strengthening and personnel training programs; development and enforcement of quality controls and standards; optimizing and reinforcing physical hydromet monitoring networks through appropriate instrumentation and ancillary infrastructure; transmission, accessibility and management of data support by IT; hydrological modeling, forecasting and early warning systems; and the development of hydromet information products and services. The second component will focus on community-facing outputs and outcomes and include building preparedness and response capacity, delivery of early warning, risk communication and community risk mapping. Finally, the knowledge and advisory services component will aim to link national, regional and global hydromet centers, and improve access to global and regional products and financing for project preparation and management. It will also facilitate open data platforms and data sharing among the beneficiary countries to establish regional networks of hydromet services and products in line with the trans-boundary nature of weather and climate forecasting services.

- **Strengthening Financial Resilience**

  The World Bank will continue to support countries in the region to develop disaster risk financing instruments and mechanisms, including (i) The Development Policy Loan with a Catastrophe Deferred Drawdown Option (Cat DDO)[69] is a contingent credit line that provides immediate liquidity to IBRD member countries in the aftermath of a natural disaster; (ii) Contingent Emergency Response components (CERC)[70] in standard investment projects; (iii) IDA Crisis Response Window (CRW);[71] and (iv) Immediate Response Mechanism (IRM).[72] These arrangements enable countries to access an immediate source of funding for rapid response in the aftermath of a natural disaster.

  - In Seychelles, the Disaster Risk Management Development Policy Loan with Cat DDO facilitated prior actions in two key policy areas to strengthen: (i) the regulatory framework for DRM; and (ii) integration of DRM into development planning and decision-making. The Cat DDO drawdown trigger is a declaration of a

[69] CAT-DDOs are Development Policy Loan (DPL) instruments that provide IBRD countries with contingent lines of credit that can be drawn upon in case of disaster.

[70] A CERC is a zero-dollar component within a project that allows for existing funds to be quickly reallocated to emergency recovery activities in the event of a disaster, thereby averting the need for time-consuming project restructuring (as the budget line, albeit empty, is already there).

[71] CRW is a specific IDA funding window for concessional assistance for post-disaster recovery and reconstruction, which is additional to country allocations.

[72] The IRM initiative encourages the introduction of Contingent Emergency Response Components (CERC) in all IDA operations. The IRM augments the resources that can be quickly mobilized for emergency response by allowing up to 5% of an undisbursed IDA portfolio in an affected country to be channeled through the CERC.

state of emergency resulting from a natural disaster, and can provide immediate access to up to $7 million to respond to immediate rehabilitation needs.

- The Contingent Emergency Response Components (CERC) can be included in all standard investment projects financed by IDA, IBRD or trust fund resources. In the event of an eligible crisis or emergency, funds can either be (i) directly made available from the CERC; or (ii) immediately reallocated from other components to offset the need for project restructuring. In 2016, the World Bank has launched the El Nino preparedness initiative which systematically includes CERCs into the existing portfolio to provide "bridge financing" for immediate response and recovery. The immediate availability of resources supports the client's first response, and facilitates the coordination in the early recovery phase, bridging the gap to longer-term recovery and reconstruction phase.
- In 2015, Niger consolidated the CERCs in four projects according to harmonized operational procedures under the Immediate Response Mechanism (IRM). It is the first African country to set up this mechanism to access up to five percent of undisbursed IDA balance in case of a declared emergency. Countries such as Madagascar and Mozambique are in the process of finalizing their IRMs.
- In 2015, Malawi was impacted by heavy precipitation and flooding. The World Bank Africa DRM team, UN and EU supported the Government to conduct a PDNA. This led to $80 million of additional IDA resources from the Crisis Response Window (CRW) for the Malawi Floods Emergency Recovery Project, which aims at restoration of agricultural livelihoods, reconstruction of critical infrastructure, and improving the Government's disaster response and recovery capacities.
- In addition to such investment operations, the World Bank is providing technical assistance to countries to develop their national disaster management funding mechanisms and assess sovereign insurance options for building financial resilience. This is further described under the *Knowledge* section below. Similarly, the World Bank will continue to seek opportunities to compliment the above mentioned financial instruments and mechanisms through programs such as the public-private partnerships for agricultural insurance and developing scalable social safety nets (refer to Section 3.1).

- **Building Urban Resilience**

  The World Bank will provide assistance to African cities to address major resilience challenges—poverty reduction, rapidly growing populations, exposure to natural hazards, climate variability, environmental sustainability, and social inclusion. To underpin the scientific basis for investments, the World Bank is supporting urban vulnerability and poverty studies initially in Antananarivo (Madagascar) and Maputo (Mozambique). These analytics will help identify policy actions to increase the resilience of the urban poor and inform the national and municipal authorities on how to better target and finance poverty reduction programs. In addition, the City Strength Diagnostic and other risk assessment and financing tools, will continue to be developed to support planning and build capacity.

Investments will be made in upgrading urban transport and critical infrastructure, promoting climate-resilient land use, improving solid waste management, and adopting integrated watershed management. The focus will be on medium-size (500,000 to 1 million people), large (1–10 million people) and megacities (more than 10 million people) that are growing at more than three percent per year, and cities with high hazard exposure and climatic impact.

In 2016–2020, the World Bank aims to provide technical assistance to 30 cities to consolidate the development outcomes of earlier investments. This will support the development of investments for 20 cities by 2020. Examples of scalable initiatives that are already underway include a flood prevention and preparedness project in Dakar; institutional and urban management systems project in Dar es Salaam; flood risk mitigation projects in Ibadan and several cities across Mozambique; post Ebola support in Sierra Leone, and implementation of the City Strength Diagnostic recommendations for Addis Ababa.

- **Mainstreaming DRM & CCA**

As Africa is vulnerable to disaster and climate risks, the World Bank will continue to support development projects aimed at building resilience to these shocks. Currently estimated at $5.8 billion and representing 10.8 percent of the total active portfolio in Africa, the Bank's DRM portfolio already shows a significant financial commitment to DRM/CCA across sector programs. The aim is to further increase this in response to country priorities. Particular focus will be given to drought resilience, flood management, coastal erosion, early warning and forecasting systems, emergency communication and management systems, urban planning, building codes and social safety nets.

To intensify support for climate resilient development, the World Bank has developed the Africa Climate Business Plan, a flagship initiative to accelerate support for climate adaptation and mitigation (Box 8). This initiative aims to increase Africa's resilience to climate change in several key sectors and cross cutting areas across the continent's development agenda, and provide

Box 8: Supporting Climate Resilient Development in Sub-Saharan Africa

The Africa Climate Business Plan aims to raise awareness and resources for priority climate-resilient and low-carbon initiatives in Africa. The ambition of the plan is to raise $16 billion in climate finance by 2020, including $5 billion from the International Development Association (IDA). The remaining resources will be requested from bilateral and multilateral sources, including climate finance, and the private sector. It focuses on twelve priority areas, where the World Bank, in collaboration with African governments, regional and international partners, expects to help achieve results to strengthen, power and enable resilience.

- Scaling up of **Climate-Smart Agriculture** (CSA) related lending in Africa, with two CSA projects under preparation in Niger and Kenya, and another 30 within three years. The aim is to mobilize $ 3 billion and have 10 million farmers adopt CSA practices by 2020.
- Mobilizing an estimated $ 850 million for African **forests**, through investments in REDD+ (Reduction of Emissions from Deforestation and forest Degradation) processes and other programs.

(*continued on next page*)

Box 8: Supporting Climate Resilient Development in Sub-Saharan Africa (*continued*)

- Strengthening **resilient landscapes** and the integrity of ecosystems to provide the full range of services for productive sectors and livelihoods. The Bank will aim to mobilize $ 755 million to support the African Resilient Landscape Initiative (ARLI), which will help design and implement country- and region-specific integrated landscape-level strategies in the Sahel, the Horn of Africa, and East Africa.
- Supporting **integrated watershed management** by mobilizing $ 3 billion by 2020 across the Niger River, Lake Chad, Lake Victoria and Zambezi River Basins to support institutional strengthening, development of information management systems and tools, and infrastructure development such as irrigation systems, water storage, and erosion control.
- Supporting **ocean economy** through an estimated $ 220 million. Analytical work will help countries to integrate climate change considerations into the ways in which fisheries and the ocean economy are managed, while investments will support the management of coastal habitats, development of alternative livelihood opportunities for coastal communities and climate smart infrastructure.
- Supporting **Climate Smart Cities** through policy dialogue, technical work, and investment financing across 30 cities totaling $ 1 billion by 2020. This will include strengthening planning and capacity building using the City Strength Diagnostic, investing in resilient infrastructure and forging partnerships and city networks for knowledge sharing.
- Building **Coastal Resilience** through the mobilization of $ 450 million by 2020. Targeting West African coastal areas, technical assistance will be provided to prepare climate-resilient coastal development and investment plans, while investments will be made in both hard (piers, artificial reefs, groins, etc.) and green infrastructure (mangroves, sand dunes, vegetation, etc.) to manage coastal erosion and flooding.
- Increasing **Social Protection** for the resilience of poor and vulnerable households by responding to disasters and new Adaptive Social Protection (ASP) approaches help build the adaptive capacity of households before climate and disaster shocks occur. In the face of increased climate-related shocks, The Bank will increase the scale and scope of social protection systems across Africa by mobilizing $ 480 million by 2020.
- Addressing **the drivers of migration,** through mobilizing $ 616 million by 2020. This will support diagnostic work to develop a better understanding of the push and pull factors behind mixed migration, identify its impacts, and craft durable solutions to inform investments. The team will first focus on two regions with urgent needs—the Lake Chad Basin and the Horn of Africa. This focus is particularly important given the impact of the 2015/2016 El Niño effect on Africa; it is also important given the significant population movement witnessed in recent years as a result of conflicts across the continent.
- Energizing **resilience through solar, hydro and geothermal energy** will scale up low carbon energy sources across the African continent and mobilize an estimated $ 5.4 billion by 2020.
- Implementing a $ 270 million hydromet framework program to support Sub-Saharan countries in strengthening National Meteorological and Hydrological Services and build capacity at the community level for preparedness and response activities.
- Helping African countries and regional organizations integrate climate change considerations into the planning, design, and operation of investment in relevant sectors, an **Africa Climate-Resilient Development Facility** is being proposed (initial support estimated at $ 50 million by 2020).

opportunities for scaling up low carbon energy sources. Planned projects aim to accelerate resource mobilization and action for priority climate resilient initiatives in Africa.

- **Supporting Sustainable Recovery**

  The World Bank will continue to support countries on post-disaster recovery and reconstruction. The World Bank is committed to integrate build back better and long-term risk reduction approaches in all financing for recovery and reconstruction. For example, the World Bank supported Malawi and Mozambique in adopting these approaches for the recovery operations following floods in 2015:

  - After the PDNA to assess the impacts of the 2015 floods in Malawi – with support from the ACP-EU NDRR Program, the World Bank assisted the Government in defining a strategy for recovery, leading to the Malawi Floods Emergency Recovery Project (MFERP). The four-year project will support resilience building through rehabilitation and reconstruction of infrastructure to climate- and disaster-resilient design standards, livelihoods restoration and food security, and strengthening the country's DRM institutional framework and operational capacities.
  - In early 2015, the central and northern parts of Mozambique were affected by heavy rains and floods. A World Bank-led Rapid Recovery Assessment, also conducted with support from the ACP-EU NDRR Program, found that the total damage and loss impact of the disaster at the national level was estimated to be five percent of the Gross Domestic Product. The assessment has led to an Emergency Resilient Recovery Project to assist the Government restore the critical infrastructure in a resilient manner in the disaster-affected provinces and to improve its capacity to respond promptly and effectively to an eligible crisis or emergency. Project activities will focus on resilient rehabilitation of key infrastructure (dikes and weirs, irrigation, water supply, and education), and capacity building activities focusing on construction of safer schools, enhancing and rehabilitating hydromet data stations, and early warning and emergency preparedness planning.

Knowledge

Informed decision-making needs a solid information and knowledge base as well as dedicated and skilled professionals. The World Bank will support countries to develop capacity, generate new knowledge, and apply this capacity and knowledge to implement reform and investment for DRM. Activities will cut across the five central pillars of the DRM framework, with a focus on the areas of: risk assessment, risk financing tools and strategies, building institutional capacity and policy development, promoting and coordinating DRM at the regional level, supporting resilient recovery, and helping countries to develop multi-sector investment plans for DRM and CCA.

- **Enhancing the Understanding of Disaster Risks**

  The World Bank will support a number of disaster risk knowledge generation and capacity building activities to catalyze dialogue with government counterparts in the region on the primary risks they face and to facilitate the formulation of DRM strategies, such as financial protection and risk reduction investment programs. Activities will include developing simplified risk profiles,

completing analytical studies on the impact of disasters on poverty, demand-driven in-depth risk assessment projects, and training and knowledge exchange events.

Simplified national-level multiple-hazard (flood, drought, earthquake, volcano, and cyclone), country risk profiles will be developed using globally available and readily accessible local datasets. The risk profiles will provide information on the impacts that disasters have on country economies and population, through the development of stochastic loss tables; loss exceedance curves with specified return period losses; and annual average loss (AAL) estimates. In the short term, simplified risk profiles will be produced for Senegal, Ethiopia, Uganda, Niger and Kenya. Using lessons learned from the first phase, and based on interest and ongoing activities and dialogue in the region, simplified risk profiles will then be developed for other African countries. Additional support will be provided for sector based in-depth risk assessments at the subnational level to answer specific policy questions or support larger programs. To complement the above-mentioned macro-level analysis, the World Bank will also support micro-level poverty analysis studies to understand the disaster risks and impacts at the household level. Targeted risk assessment training workshops will be held at the country level, and a risk assessment community of practice will be established for Africa, using platforms such as the Building Disaster Resilience for Sub-Saharan Africa website and the Regional Understanding Risk (UR) conferences.

- **Helping Countries on Risk Financing**
  In response to increasing country demand, an initiative has been launched to assist countries in Africa systematically enhance country and regional capacities to better manage climate and disaster risks and leverage DRM entry points to promote long-term resilient development. The ADRF, is part of the Program "Building Disaster Resilience to Natural Hazards in Sub-Saharan Africa", an initiative of the ACP Group of States, financed by the EU, and aims to help countries build their financial resilience to disasters. The three overall objectives of the initiative include: i) supporting the development of multi-risk financing strategies at the regional, national and local levels to help African countries make informed decisions; ii) improving financial response capacity post-disaster; and iii) mitigating the socio-economic, fiscal and financial impacts of disasters in African countries.

  Activities under the ADRF initiative will be calibrated according to the respective stages in which different countries are in at present. They will range from diagnostic and initial country engagement, to formulation of national strategies, to the implementation of strategies. Diagnostic work will include high-level country snapshot reports for up to ten countries for the purpose of providing a regional comparison and highlight existing activities, challenges and gaps in terms of financial solutions and capacity. A methodology, guidelines and standardized set of capacity building tools are being designed in collaboration with government counterparts with the aim of helping governments design national risk financing strategies. In countries moving forward with the implementation of risk financing strategies, the ADRF initiative will provide national and subnational entities with the necessary technical, legal, operational and institutional support

to evaluate and, if appropriate, implement policy reforms and financial instruments, and develop risk market infrastructures and public goods that would be necessary to manage disaster risk. Support for implementation can include: assistance with new legislation and regulation, institutional reform, design of new structures/funds within the budget, structuring financial instruments, budgetary systems and insurance pools and vehicles, developing new delivery mechanisms for social protection/insurance, and assisting with legal/regulatory infrastructure necessary to support development of insurance markets.

- **Strengthening Institutional Capacity and Policy**

  The World Bank will support the strengthening of institutions and DRM policies in the countries, in line with the Sendai Framework. In Ethiopia, for example, the World Bank is supporting the rollout of the DRM policy and DRM Strategic Programme and Investment Framework, which shifts the country's DRM efforts from a responsive approach to an ex-ante, inclusive multisectoral risk management approach.

  The World Bank will also help to build capacity for technical innovations that build resilience to disaster and climate risks, with particular focus on the poor and vulnerable communities. In Mali, for example, the World Bank is supporting innovative public private partnerships with cellphone operators to determine the potential for deriving reliable rainfall estimates. While the Sahel is affected by increasing intensity and frequency of urban and riverine flooding, Government-allocated resources to measure precipitation and model the hydrology are decreasing. Therefore, as a component of the Strengthening DRM in Mali project, the World Bank is working in partnership with the National Meteorological Service, a cellphone operator, Civil Protection, the Municipality of Bamako and the French Institute for Research and Development to demonstrate the possibility of deriving reliable rainfall estimates from cellphone operators. This type of innovative public private partnership could not only fill a critical gap in climate observation but also lead to enhancing the response from authorities and the public with more effective dissemination on the basis of information coincidentally derived from cellphone signals.

- **Promoting Regional Cooperation for Disaster Risk Management**

  The Regional Economic Communities (RECs) in Africa convene their member countries for achieving greater integration. They are the 'building blocks' of the African Union (AU) and are central to the implementation of the New Partnership for Africa's Development (NEPAD). The RECs have the mandate for coordinating disaster risk reduction at the sub-regional level. They have formulated sub-regional policies and strategies, and support their member states in disaster response.

  Under the "Building Disaster Resilience to Natural Hazards in Sub-Saharan African Regions, Countries and Communities" program, an initiative of the ACP Group financed by the EU, the World Bank is supporting four African RECs to strengthen their disaster risk reduction capacity with grant assistance. In 2016-2020, the following activities are planned with the RECs:

  - ECOWAS will be supported to reinforce its DRM capacity, establish a regional flood management mechanism, foster

its DRM policy, and strengthen disaster preparedness in the region.

- ECCAS will be supported in hazard, vulnerability and risks assessments, DRM mainstreaming and capacity building, strengthening policy dialogue and legislation, and increasing regional capacity for post-disaster assessments and reconstruction planning.
- IGAD will be supported in reviewing its DRM strategy and program, increasing awareness at the political level, updating policies, strategies and legal framework, strengthening the IGAD Disaster Response Fund, establishing a regional framework for flood early warning and early action, strengthening institutional capacity at member states, promotion of climate smart agriculture and developing a framework for mainstreaming DRM in school curricula.
- SADC will be supported in establishing a framework for a regional flood-hazard early warning system, strengthening the DRM institutional capacity of SADC and member states, reviewing policies, strategies and legal framework for DRM and providing access to knowledge and international expertise to advance the DRM regional agenda.

- **Building Capacity to Respond and Recover from Disasters**

In response to government requests, the World Bank will support countries in post-disaster events to determine the extent of economic impacts and help define recovery priorities through PDNAs. The World Bank will continue to work with UNDP and EU to improve the methodology and capacities for conducting such assessments. Moving towards a holistic recovery framework, the World Bank will further improve the Disaster Recovery Framework, which serves as a tool for planning, coordinating, and managing the long-term recovery process. Such efforts will stress the importance of coordinated, cost-effective and resilient recovery strategies for the at-risk countries.

In addition to assessing the impact of natural disasters, there is growing interest for the World Bank to provide support, along with its development partners, in post conflict environments. The methodology for the Post Conflict Needs Analysis (PCNA) continues to be further adjusted to suit highly complex conflict environments. Recovery and peacebuilding assessments have currently been initiated in Mali and Nigeria.

The World Bank's Africa DRM Team will continue to maintain its internal Emergency Monitoring and Advisory System (EMAS), which informs World Bank staff of recent, imminent or ongoing disasters, both rapid and slow-onset. The group is also exploring the development of a simplified impact estimation model, using satellite imagery and geospatial economic data to provide initial readings of disaster scale and impact in a systematic manner.

- **Developing Investment Plans for Climate and Disaster Risk Management**

As part of the corporate commitments of IDA17, the World Bank is undertaking a number of activities to further ensure that climate and disaster risks are adequately incorporated into IDA operations. These include: (i) incorporating climate and disaster risk considerations into the analysis of the countries' development challenges and in the programs and results framework; (ii) screening all new IDA operations for short- and long-term climate change and disaster

risks and integrating appropriate resilience measures; and (iii) supporting IDA countries to develop and implement country-led, multi-sector development and investment plans for managing climate and disaster risk in at least 25 additional IDA countries. The World Bank teams will undertake rapid diagnostics, followed by broader consultation with line ministries, development partners and other stakeholders. For Africa, 15 national multi-sectoral plans will be prepared by June 2017.

Partnerships

Over the next five years, the World Bank is expanding and deepening diverse partnerships that help to deliver innovative risk reduction solutions for Africa. A broad network of regional, country and international development partners provides access to global knowledge, builds technical and operational collaboration, and facilitates the mobilization of resources. The World Bank will also facilitate South-South partnerships among countries for knowledge exchange and regional cooperation.

- **Leveraging Existing Partnership Platforms**
  The Africa Working Group on DRR (AWG-DRR) provides a strategic platform to systematically strengthen cooperation and collaboration between African countries and their development partners, including the African Union Commission, African Development Bank, European Union, Regional Economic Communities, UN agencies, bilateral donors, academia, civil society and the private sector. Through such platforms, the World Bank will continue to deepen cooperation and knowledge exchange with academic networks, such as the Partners Enhancing Resilience for People Exposed to Risks (Peri Peri U), which play a critical role in developing active training, and research and policy advocacy capacity for DRM in Africa. The ACP-EU 'Building Disaster Resilience to Natural Hazards in Sub-Saharan African Regions, Countries and Communities' program is aimed at strengthening this cooperation and its hosting platform, by strengthening the African Union Commission, and enabling the African Development World Bank, UNISDR and the World Bank to better support countries with DRM solutions, particularly in risk assessments, risk financing, early warning and disaster databases. The Regional Platforms and National Platforms convened by UNISDR and its partners are also crucial in leveraging DRM knowledge and solutions through coordinated actions. The Understanding Risk and Finance Conference (2015) led to the formation of a DRM Community of Practice specific to Africa, which is expected to develop into a voluntary network for knowledge exchange and south-south cooperation in the government and technical sectors.
- **Strengthening Collaboration with Regional Economic Communities**
  The World Bank is committed to strengthening the RECs in Africa for optimal regional cooperation in DRM. The RECs perform a twin role in supporting disaster and climate risk management. Several of them house the sub-regional institutions and capacity for early warning, emergency response and data sharing. They also serve as the coordinating entities for member states' individual efforts at disaster and climate risk management, which allows regional integration and economies of scale. Efforts such

as ICPAC (which is IGAD's Climate Prediction and Application Center), the upcoming Early Warning and Forecast System of ECCAS in Douala, the ECOWAS initiative for regional flood observation and management, and SADC's Climate Services Center are good examples of the convening power of the RECs that needs to be harnessed and strengthened. The ACP-EU 'Building Disaster Resilience to Natural Hazards in Sub-Saharan African Regions, Countries and Communities' Program has provisioned additional finance for strengthening the capacity of four RECS covering the entire region – IGAD, ECCAS, ECOWAS and SADC. The capacity building of the RECs will focus on DRM coordination, planning and policy advisory capacities both internally and also for supporting the respective member states.

- **Enhancing National and Local Level Engagements**

The World Bank is currently supporting 22 African countries through 48 DRM activities. It is seeking to broaden this engagement to more countries, and also to deepen country and regional engagements through the development and implementation of multi-sectoral investments plans for managing climate and disaster risk in a minimum of 15 African countries by June 2017. The World Bank also recognizes that countries have varied disaster and climate risk profiles, and are at different stages of socio-economic development. This requires customized and demand-driven approaches for designing the disaster and climate risk management initiatives in consultation with the countries. It also requires the World Bank to adopt a qualitative approach to DRM mainstreaming for building resilience. As the World Bank deepens this engagement with countries in Africa, it will assist countries on the basics of disaster and climate resilience in understanding risk, early warning and preparedness, and resilient recovery, and also in the sophisticated aspects of risk reduction and risk financing.

In this nuanced approach for building medium and long-term resilience in countries and communities, the World Bank will partner with government and non-government stakeholders at all levels, including the national, local and community levels. Improved partnerships with local communities and leveraging their capacities and indigenous knowledge will improve the effectiveness of the World Bank's support for climate and disaster resilience. Local communities and authorities are the most interested stakeholders in DRM, and often the first responders when a disaster strikes. This makes it imperative for the World Bank to engage closely with local communities and authorities in order to build capacity at the cutting edge, and also improve participatory and inclusive planning and implementation of DRM solutions.

- **Deepening Cooperation with Development Partners**

GFDRR donors are strategic partners in the DRM agenda in Africa. Their sustained support makes systematic DRM engagement with vulnerable countries possible. These partnerships are crucial as the World Bank scales up its support for building disaster and climate resilience in the region. The ACP-EU Natural Disaster Risk Reduction) Program and Building Disaster Resilience in Sub-Saharan Africa Program have been instrumental in bringing a much-needed adequacy and predictability in the World Bank's technical assistance and capacity building works in Africa. Similarly, the other Special

Program of GFDRR, the Japan-World Bank Program for 'Mainstreaming Disaster Risk Management in Developing Countries' is vital in connecting African countries with Japan's global expertise to support DRM initiatives in Africa. It is expected that the cooperation among Japan, African countries and the Bank on DRM will be further strengthened through the TICAD[73] process, which is due to meet next in Africa in 2016.

In conclusion, the World Bank is committed to mainstreaming DRM and CCA in Africa at a time of unprecedented interplay of development challenges with disaster and climate risks. The Sendai Framework, the Sustainable Development Goals and the COP21 Agreement are testimony to the growing momentum for enhancing the resilience of developing countries in the face of increasing climate and disaster risk. The Africa DRM Strategic Framework will leverage decades of development experience at the World Bank to work closely with governments and other stakeholders to scale up investments, knowledge and partnerships aimed at building disaster and climate resilience in Africa.

[73] Tokyo International Conference on African Development (TICAD).

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