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In Focus

International Development Association (IDA) Countries: Resilience and Disaster Risk Management Stories

GFDRR
Global Facility for Disaster Reduction and Recovery

THE WORLD BANK
IBRD • IDA | WORLD BANK GROUP

Notes: Fiscal year (FY) runs from July 1 to June 30; all dollar amounts are in U.S. dollars ($) unless otherwise indicated.

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Table of Contents

Chad. Photo: Mustafa Olgun.

Foreword

Grappling with their fair share of development challenges, countries supported by the International Development Association (IDA) are also highly vulnerable to the impacts of a changing climate and intensifying disaster risk.

The good news is that over the past decade, IDA countries have made tremendous progress in strengthening their ability to understand, manage and reduce risk, thus laying the groundwork for a more resilient future for their citizens.

The Global Facility for Disaster Reduction and Recovery (GFDRR), in close collaboration with the World Bank, has played its part in driving that progress.

Tapping into its long experience and deep expertise in disaster risk management and climate resilience, and capitalizing on its unique position with the World Bank, the Facility has mobilized and delivered funding, knowledge and technical assistance that has been instrumental to the resilience building efforts of IDA countries in every region of the world.

In the wake of the COVID-19 pandemic, GFDRR's core mission to bring resilience to scale has become even more important than ever. The Facility has acted swiftly to support the global response, drawing on the fundamental pillars of its work, including risk identification, risk reduction, preparedness, and financial protection.

As IDA countries strive to not only build back better in the aftermath of COVID-19, but also sustain and even accelerate the progress they've made in tackling disasters and climate change, it is vital that we take stock of what we've achieved and learned in our efforts thus far. In that spirit, this booklet highlights stories of impact from GFDRR's engagements in IDA countries.

Best,

Niels B. Holm-Nielsen
Head, GFDRR

Madagascar. Photo:pierivb.

Africa

AFRICA REGION

Promoting Open Access to Risk Information

GFDRR Labs: Addressing the gender divide in digital technologies

GFDRR Labs focuses on delivering solution-driven research and development in disaster risk management to address identified gaps and obstacles. It identifies challenges, undertakes research, consults a broad range of stakeholders, connects to existing communities, and develops pilot global public goods. Committed to continuous learning, successes and failures inform the continued development and improvement of the ideas.

This year, one of the challenges GFDRR Labs examined is the gender divide in digital technologies and mapping. The lack of women engaged in digital projects has tangible consequences and can run the risk of worsening inequalities. Labs sought to better understand why it is difficult for women to take part in digital participatory mapping projects through the Open Cities Africa project and pursued ways to address the obstacles in the program design.

Women face many hurdles and challenges, including lack of education and decision-making authority as well as having more responsibilities at home than men have, while also facing security concerns when going out into the field. Moreover, there is a lack of role models that women can look up to in the field, all contributing to the digital gender gap.

The Open Cities teams tried to address these barriers by providing comprehensive training to every participant in the program. A team in Ngaoundéré in **Cameroon** met with local heads of households to introduce the project and explain the benefits of involving women and girls in this work. To accommodate responsibilities at home, data collectors in several cities were allowed flexible schedules, which let women select times to work when they were available. In Antananarivo, **Madagascar**, teams traveled through communities in pairs to ensure the security of female members. And in Accra, **Ghana**; Kinshasa, **the Democratic Republic of Congo**; and Pointe-Noire, **the Republic of Congo** women led community outreach efforts, serving as role models to women interested in data collection and mapping.

Efforts taken to promote women's participation have produced tangible benefits. Among these is an emerging cohort of female Open Cities Africa alumni with digital skills who are now serving as role models for other women in their communities. Through the Open Cities Accra project, Pascalina Awelana Abadum, a member of the data collection team, developed an interest in data quality and the use of drone imagery. Encouraged by her project supervisor, she went on to complete an internship with local drone imagery provider Soko Aerial Robotics, and she was ultimately selected to participate in the 2020 Africa Drone Forum in **Rwanda**. Today, Abadum works on data quality for the Humanitarian OpenStreetMap Team, where she supports community projects focused on COVID-19 response and promoting girls' access to education.

Actions taken to address barriers to women's participation can begin to close the digital gender gap in cities across the region and promote the creation of maps and mapmakers that represent the needs of all community members. Supporting better representation and the growth of more female local champions like Abadum will, in turn, support more inclusive and resilient urban development.

One Female Mapper's Open Cities Africa Experience: Pascalina Awelana Abadum (front center). Photo: World Bank.

Forecast-based financing pilot in Indonesia

The GFDRR Labs Challenge Fund supports innovative solutions for identified disaster risk management obstacles. This year, the topic focused on how to support early action and better target vulnerable communities with funding following forecasted disasters—otherwise known as forecast-based financing.

Implementing forecast-based financing is difficult because, when a hydrometeorological forecast is issued, it is not clear to risk managers what kind of impacts to expect. Questions like "Will houses be destroyed?" or "What roads will be impacted, and where?" usually arise. Without information about potential impact, risk managers do not know what early actions to take and where to implement them.

Partnering with the Red Cross Red Crescent (RCRC) Climate Centre and Kartoza, a tech start-up, Labs supported the development of the first of its kind impact-based forecasting tool to address floods in Indonesia. The pilot has adopted the concept of impact-based forecasting—an approach that combines the understanding of forecasts, impact-hazard curves, and risk analysis—to generate an intervention map that will inform when and where funds for early action should be deployed. These efforts will support anticipatory action and help reach vulnerable communities and provide broad support for the strategies once they were developed.

AFRICA REGION

Enabling Resilient Recovery

Advancing emergency preparedness and response in Cabo Verde

Located 500 kilometers off the western coast of Africa, the small island developing state of Cabo Verde grapples with a range of natural hazards that are increasingly exacerbated by climate change, including hurricanes and tropical storms, droughts, and flash floods. In 2017–18, sustained low levels of precipitation led to a severe drought that devastated the agriculture sector. Highly vulnerable to geological hazards, in 2014–15 Cabo Verde wrestled with the impacts of a volcanic eruption on the island of Fogo that displaced nearly a thousand people and caused a great deal of damage in road infrastructure and nearby villages.

Cabo Verde has been stepping up its efforts to build the country's resilience to disasters and climate change, and in late 2018, the national government approved an overarching framework for those efforts: the National Disaster Risk Reduction Strategy. GFDRR and the World Bank have been working closely with the government of Cabo Verde and other development partners to operationalize this strategy, including strengthening the emergency preparedness and response (EP&R) system. This engagement has deepened following the World Bank's June 2019 approval of Disaster Risk Management Development Policy Financing with a Catastrophe Deferred Drawdown Option (Cat DDO), a contingent line of credit that can be accessed when a natural catastrophe occurs. The financing arrangement will support the government in strengthening its institutional and legal framework for disaster and climate resilience.

In partnership with the National Civil Protection Service and with the support of the government of Luxembourg, GFDRR and the World Bank provided critical technical and financial assistance toward a comprehensive EP&R diagnostic assessment for Cabo Verde. The assessment draws upon the World Bank's Ready2Respond methodology, which assesses EP&R capacity based on quantitative data covering five core areas: legal and institutional frameworks, information, facilities, equipment, and personnel. A technical team engaged with over 150 stakeholders—spanning the government's ministries, agencies, and public institutions, along with the private sector and civil society—to collect and validate the data, which included 72 indicators across the five core areas.

A key conclusion of the assessment, which was completed in December 2019, is that Cabo Verde's EP&R would be well-served by a shift toward a more proactive, systematic approach that draws on good practices already in place. These include the current strong commitment of emergency responders and local communities to react effectively to emergencies and crisis situations, while also learning and innovating for future crises, in addition to the government's extensive engagement with the private sector and civil society.

Moreover, the assessment also identified several key investment opportunities that, even with limited targeted funding, could significantly strengthen Cabo Verde's EP&R system. These include the establishment of a national emergency operations center, the implementation of crisis management plans, and the completion of the EP&R legal framework. The technical team has been working with the government of Cabo Verde to develop a sequenced investment plan that seizes on these opportunities.

GFDRR's support for strengthening the EP&R system in Cabo Verde is only one among a broader suite of efforts to advance the country's resilience to disaster and climate change. For instance, as part of the World Bank–supported Cat DDO program in Cabo Verde, the technical team has also been working with the Ministry of Finance to enable the establishment and operation of the National Emergency Fund (NEF), including the preparation of an operational manual that was adapted to allow the use of the NEF as a critical financial instrument for the country's COVID-19 response. The Cabo Verde Cat DDO was financed with $5 million from IBRD and $5 million from IDA; it was fully and rapidly disbursed in April and May 2020 to support the government's response to the impact of COVID-19. The Cat DDO was the first instance of international financial support for the government during the pandemic.

Neighbors in Cabo Verde. Photo: Eric Valenne geostory.

Lessons Learned

It is important to help country leaders understand the value of improving EP&R, not only in terms of the significance of investing in upgrades to their systems' capabilities and capacities, but also in terms of EP&R's role in enabling a government to undertake its core responsibility of protecting its citizens. This investment must be systematic to be both effective and coordinated since operating in silos does not work in responding to emergency and disaster situations.

"[The assessment] gives us critical recommendations to guide investments required to strengthen the national emergency preparedness and response system to have an effective and efficient service that save lives when extreme events hit our country."

—Renaldo Rodrigues, President of the National Civil Protection Service of Cabo Verde

Results in Numbers

Engaged with over 150 stakeholders to collect and validate data spanning **72 indicators** for analyzing emergency preparedness and response capacity in Cabo Verde

AFRICA REGION

Strengthening the Nexus between DRM and FCV

Leveraging citizen engagement to tackle the DRM-FCV nexus in Guinea and Kenya

Across the globe, an increasing number of countries is affected by the interrelated and mutually reinforcing challenges of disaster and climate risks and those of fragility, conflict, and violence (FCV). **Guinea** and **Kenya** are no exception to this trend. The northern region of Kenya has been dealing with the complex interplay of droughts and communal and armed conflict over natural resources. Guinea, meanwhile, is highly exposed to disaster and climate hazards even as it copes with longstanding social and political tensions.

Locally led efforts in both Guinea and Kenya, including those by local governments, are at the forefront of tackling these critical challenges. In FY20, the GFDRR DRM-FCV Nexus Program supported these efforts, with a focus on leveraging citizen and community engagement at the nexus of disaster risk management (DRM) and FCV.

A focus of GFDRR's efforts in both Guinea and Kenya has been to better understand the barriers to citizen and community engagement with respect to marginalized groups such as women, young people, and traditional leaders. For example, in Kenya, a technical team worked with local partners to conduct a survey of stakeholders' perceptions and experiences at the country level. Even as the survey revealed an increasing appreciation for the importance of resilience-building, including in the context of the DRM-FCV nexus, it also highlighted two potential barriers to engagement: gaps in applying DRM-FCV resilience-building practices to county-level planning processes and a lack of tools to help stakeholders drive resilience development in their local communities.

In conjunction with these efforts, technical teams in both Guinea and Kenya have also been working with local partners to develop frameworks and methodologies for better integrating citizen and community engagement in local development plans, with a focus on the DRM-FCV nexus. For instance, in Guinea, a team has been supporting the National Agency for Local Development Financing, which has selected two local governments to pilot the methodology that integrates challenges around the DRM-FCV nexus in the development planning processes across both rural and urban areas. These efforts are also expected to influence local governments' annual investment plans. In the past, local development plans, although formed with extensive community participation, had not systematically integrated DRM-FCV risks.

Even at this early stage of the work, these engagements are already informing governments and other key stakeholders as they move forward with resilience-building efforts in Guinea, Kenya, and beyond. For example, it is expected that the methodology for integrating challenges around the DRM-FCV nexus will be adapted to a forthcoming World Bank regional operation in the Lake Chad region (**Cameroon, Chad, Niger,** and **Nigeria**).

Nairobi, Kenya. June, 2020. Women migrating to find a better and cheaper life away from Kibera. Photo: SOPA Images Limited/Alamy Live News

Lessons Learned

Understanding key stakeholders' perceptions and experiences is critical to effective resilience-building. Accordingly, as part of this effort, a team in Kenya surveyed county-level stakeholders to better understand the gaps and opportunities when it comes to leveraging citizen and community engagement. A major opportunity identified in that survey is the strong appreciation by county-level stakeholders for the importance of resilience-building at the nexus of DRM and FCV.

"For a long time, we have talked of strategies for integrated climate- and hazard-related risk reduction and peacebuilding in planning. The integrated framework gives us a practical tool to achieve climate change adaptation and disaster risk reduction. We at the Isiolo County are really excited about applying this tool and hope to generate experiences that can help other counties."

—Salad Tutana, County Chief Officer, Department of Livestock and Agriculture, Isiolo County Government, Kenya

Results in Numbers

75 percent of the stakeholders consulted in Kenya said tackling the interplay of climate and conflict risks represents a key opportunity for resilient development at a local level

AFRICA REGION

Mozambique: Cyclones Idai and Kenneth

Relief efforts in Mozambique after Cyclones Idai and Kenneth in early 2019 showcase GFDRR's holistic approach to disaster risk management (DRM), from projects which strengthened lifesaving infrastructure before the cyclones hit and innovative financial solutions which are helping the government build back better and providing support to small and medium enterprises to continue operations.

On March 14, 2019, Mozambique was hit by Cyclone Idai, the second-deadliest tropical cyclone ever recorded in the South-West Indian Ocean basin. With powerful winds and extensive flooding, it killed more than 600 people in the northern and central parts of the country, directly affected more than 1.8 million people, and devastated infrastructure, with recovery needs exceeding $3 billion. Cyclone Idai also had significant impacts in the neighboring countries of Malawi and Zimbabwe, and the devastation of its aftermath was exacerbated by the impact of Cyclone Kenneth, a less deadly storm which struck on April 23, 2019. Humanitarian agencies responded quickly to the disasters, providing much needed aid to those affected. As they tended to the most urgent human needs, support from GFDRR helped the government of Mozambique and technical teams with early response and planning for next steps.

The immediate aftermath

Shortly after Idai dissipated, an initial damage assessment using the Global Rapid Post-Disaster Damage Estimation (GRADE), a speedy and information-rich remote methodology, was done, drawing on analysis done by World Bank teams with GFDRR support through a Just-in-Time (JIT) grant. Using satellite imagery along with data compiled through the Africa Disaster Risk Financing Initiative (ADRF), the GRADE analysis identified approximately $773 million in damages to buildings, infrastructure, and agriculture. Equipped with this knowledge, the government and recovery teams were able to make more informed decisions about allocation of recovery resources in a much shorter time frame. Following the GRADE, a team was on the ground in Beira supporting a government-led Post-Disaster Needs Assessment (PDNA). The PDNA estimated that Cyclone Idai caused about $1.4 billion in total damage and $1.39 billion in losses, with major impacts in housing and transport infrastructure.

Looking ahead

The findings of the PDNA helped mobilize further support and directly informed the preparation of the Cyclone Idai & Kenneth Emergency Recovery and Resilience Project. The project is a $130 million IDA Crisis Response Window grant, which will be used to repair and reconstruct housing and rebuild public infrastructure while strengthening climate resilience in the areas most affected by Idai and Kenneth. The project also has a first-of-its-kind private sector recovery component that will help micro and small-sized firms get back on their feet and improve access to finance through matching grants, credit lines, and technical assistance to support the implementation of these firms.

Coming together for a more comprehensive DRM plan

These resilient recovery activities complement existing and long-standing DRM efforts in the country. In the days following Idai, the World Bank approved the Mozambique Disaster Risk Management and Resilience Program, a project which had been under preparation during the previous two years with support from the ADRF initiative. The $90 million project ($84 million from IDA and $6 million from Global Risk Financing Facility, GRiF)[1] is supporting implementation of Mozambique's second DRM master plan, which will strengthen disaster preparedness throughout the country, improve climate resilience in its school infrastructure, and enhance financial protection against disasters through a new Disaster Management Fund.

The project includes two financial instruments for disaster response:
(i) a contingency fund capitalized with IDA funds and the national budget, which was first used to respond to the recovery requirements following Cyclone Idai, and (ii) a sovereign risk insurance scheme that is being prepared with the $8 million in grants provided by the GRiF. Of this, $6 million is directly co-financing IDA resources in the project to pay for premium subsidies for cyclone or drought insurance, which is complemented with $2 million in technical assistance to support the government on design and implementation of the instrument.

The master plan is aligned with the priorities of the Sendai Framework for Disaster Risk Reduction, and has five strategic pillars: (i) improving the understanding of risk;

[1] GRiF is co-managed by GFDRR and the World Bank's Finance, Competitiveness, and Innovation Global Practice.

May 1, 2019: Aerial view of devastated fishing village after Cyclone Kenneth in Pemba, northern Mozambique. Photo: fivepointsix.

(ii) strengthening governance and public and private participation in disaster risk reduction; (iii) mainstreaming DRM in public investment and territorial planning, and consolidating financial protection against disaster; (iv) strengthening disaster preparedness, response, rapid recovery, and resilient reconstruction; and (v) building partnerships and international cooperation.

Successful DRM investments helped strengthen the case for more

The losses could have been even worse. Mozambican cities have high exposure to coastal and river flooding. Fortunately, the city of Beira had recently upgraded its stormwater drainage system. Just six months before Idai made landfall, the first stage of the IDA-supported Mozambique Cities and Climate Change Project was completed. The new drainage system, which benefits over 250,000 people, including over 70,000 people living in informal settlements, helped divert large quantities of storm water out to the sea. The areas that had benefited from drainage rehabilitation investments under the project suffered little to no flood damage compared to areas not serviced by rehabilitated drainage systems.

The success of this intervention has helped drive institutional support in Beira to undertake other resilience-building projects. "The drainage system and water retention basin worked well during heavy rains earlier this year," said Beira Mayor Daviz Simango during the aftermath of the storm. "Even after Cyclone Idai, Beira faced less flooding than other parts of the country. Now we need to extend our drainage network to other parts of the city."

AFRICA REGION

Promoting resilience to climate change

Making transportation climate resilient in Freetown

Freetown is a vibrant city of 1 million inhabitants, contributing to 30 percent of Sierra Leone's GDP, and located on a hilly peninsula surrounded by the Atlantic Ocean. It is one of the world's most vulnerable cities to the impacts of climate change, with floods and landslides compromising its transport system, which is so important for its economic development. During the rainy season, the already inadequate transport services, badly maintained infrastructure, and chronic congestion are exacerbated by floods, which hinder access to jobs, universities, and overall mobility in the city. The public transport services in Freetown are growing rapidly—both formally and informally. Lack of data and a poor understanding of the vulnerabilities of the transport system to climate-related hazards is preventing city planners from improving and developing a sound and resilient transport system to meet the growing demand.

To address those challenges the government of Sierra Leone, with support from the Facility, worked to gain a better understanding of the roads' vulnerability to floods and landslides and how climate change would affect the patterns and characteristics of those events. They collected data on public mobility on formal and informal transport systems and identified interventions to enhance the resilience of transport systems.

To promote the use of innovative approaches for data collection, the World Bank transport team in Sierra Leone partnered with students from the Fourah Bay College, the engineering university in Freetown, and the WBG's WhereIsMyTransport initiative. Mobile applications, such as the RoadLabPro, were used by local civil engineering students to map 4,038 km of formal and informal transportation systems. Flooded areas and the locations of critical road infrastructures, such as drainage and culverts, were also mapped. With this information, together with climate change projections for rainfall and sea level rise, researchers at the University of California Berkley developed risk maps for several scenarios and computed risk reduction for different road interventions.

A Resilient Urban Mobility Hackathon was also organized in collaboration with the Directorate of Science Technology and Innovation. More than 110 talented young people mentored by experts gathered for three days to produce innovative solutions

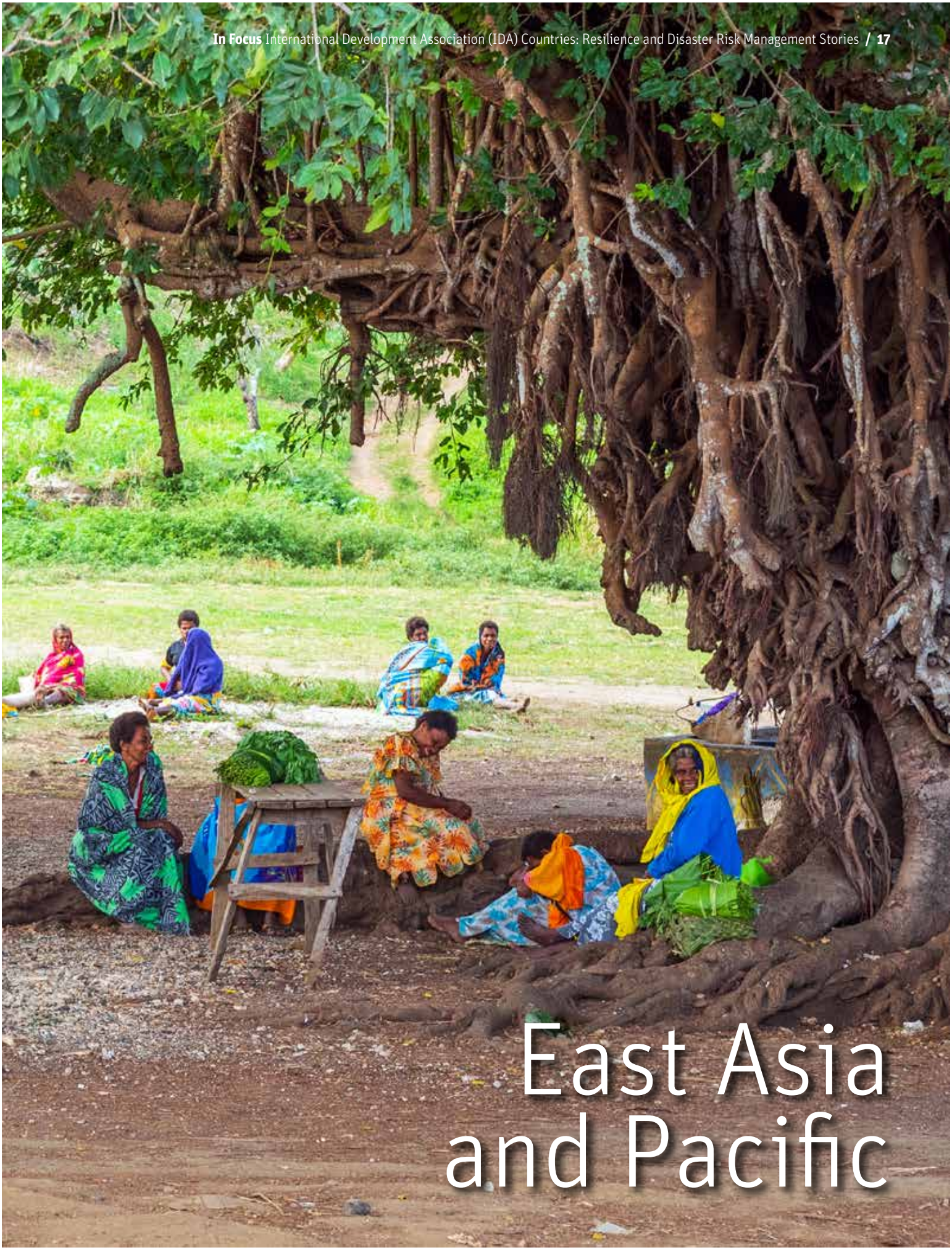
Freetwon, Sierra Leone. Photo: World Bank.

for challenges related to resilient urban mobility. Winning solutions that will be developed include an app for cashless payment systems for public transport with adapted features for people with disabilities; a platform that reports on important information for flood mitigation; and a bus routing system with emergency response features.

This work resulted in the first comprehensive climate risk–informed transport map of Freetown and will support decision making on everything from infrastructure and policies to journey planning. It has already informed the $50 million Integrated and Resilient Urban Mobility Project funded by IDA that will address identified challenges. Because the transport map is also publicly available, several developers across West Africa are building apps to support decision making and journey planning.

"I see we are going in the right direction. We need to use more data for decision making. And we need more people locally that can collect and analyze the data to make the decisions."

—Professor Obafemi Davies, Head of Civil Engineering Department, Fourah Bay College



East Asia and Pacific

Vanuatu. Photo: Gerold Grotelueschen

EAST ASIA PACIFIC

Building social resilience

Building resilience from the bottom up in the Solomon Islands

A household in the Solomon. Photo: World Bank.

Results in Numbers

Overall, **64,000** people benefited from community-led resilience projects

Nearly **70** community-led resilience projects were supported

7 seismic and volcano monitoring stations were supported

Located in the Pacific Ring of Fire, the Solomon Islands are highly prone to natural hazards. Each year, the country incurs an average loss of $20 million as a result of earthquakes and tropical cyclones alone. Ranked among the top 10 countries with the greatest exposure and vulnerability to disaster, the Solomon Islands face the specter of more severe weather extremes as a result of climate change.

Recognizing the importance of building resilience from the bottom up, GFDRR supports efforts by the government of the Solomon Islands and select provincial governments to engage with communities in the Pacific Island nation so that they can take the lead in managing disaster and climate risks closest to home.

With the support of the ACP-EU Natural Disaster Risk Reduction Program, nearly 70 community-level resilience projects are underway across the provinces of Central, Guadalcanal, Malaita, and Temotu. Local communities are at the helm of these efforts, helping to ensure that results and outcomes are sustainable over the long term.

One example of what has been achieved so far is a community-led effort in the village of Nanggu that has built 15 water standpipes, which provided water to 700 residents and strengthened their ability to cope with natural hazards. Overall, 64,000 people have benefited from the community-level projects, which also include earthquake retrofit strengthening or cyclone strengthening of buildings, foundation raising for flood alleviation, safe footbridges, community safe houses, and shoreline protection measures.

In view of the particular needs and vulnerabilities of women, the community-level projects put a heavy focus on ensuring that they have a key role to play in decision making during the project identification and selection process, as well as during design and implementation. Women are estimated to comprise nearly half of the direct beneficiaries of the project.

Taking a comprehensive approach to community resilience, the Facility is also supporting the national and select provincial governments in integrating disaster risk management in their policies and practices, including at the community level. For instance, this engagement has facilitated the development of nearly 80 community-based disaster risk management plans. It has also enabled the implementation of a revised national disaster management plan designed to strengthen the governance of this sector at the national, provincial, and local levels.

Further, technical assistance is also being provided to strengthen the Solomon Islands' climate and disaster risk information. The country's seismic monitoring infrastructure has been enhanced significantly, beefing up authorities' ability to detect seismic activity and disseminate early warnings to communities. A milestone achievement has been the modernization of the Ministry of Environment, Climate Change, Disaster Management and Meteorology (MECDM)'s risk information management system, making climate and disaster risk data much more usable and accessible for end users.

EAST ASIA AND PACIFIC

Enabling Resilient Recovery

Recovery and resilience in Lao PDR

The Old Bridge in Luang Prabang, Lao PDR. Photo: holgs.

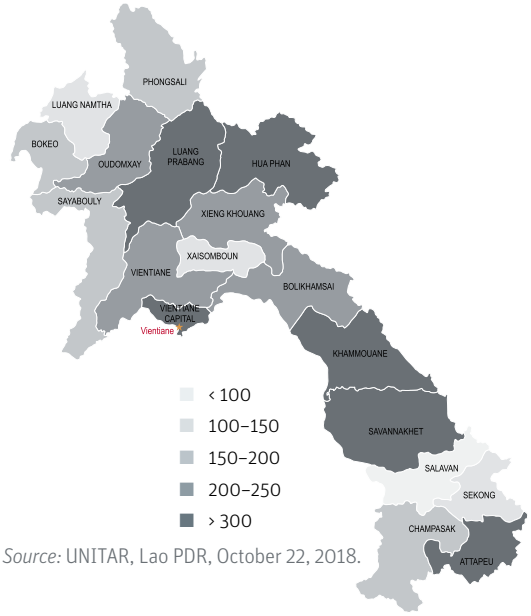
In 2018, Lao PDR suffered its most damaging and costly floods in a decade. Heavy rains from two tropical cyclones resulted in the collapse of a saddle dam in Attapeu province, which caused flash floods. Overall, 64 people lost their lives and more than 600,000 people across the country were affected. The destruction of farms and microenterprises, along with the disruption to social services, affected income sources and increased debt levels for the 70 percent of households already in debt. Vulnerable communities were particularly affected, especially with the displacement caused by the destruction of almost 1,700 houses.

GFDRR provided a Just-in-Time grant of $100,000 to help identify priority needs following the floods, together with technical support for a government-led Post Disaster Needs Assessment (PDNA). With support from the Facility, teams from the World Bank, the UN, and EU, worked with civil society organizations to assist the government with the assessment.

With close cooperation between the partners, an assessment was completed in less than a month. The PDNA report estimated total damages of $371.5 million, equivalent to 2.1 percent of the country's projected 2018 GDP, and 10.2 percent of Lao PDR's annual budget in 2018. Recovery needs were estimated at $520 million, with the highest impacts identified in the transport, agriculture, and waterways sectors. The PDNA highlighted actions for improving gender equality and child protection in the recovery process.

Since the assessment, the World Bank and the government of Lao PDR have been working to implement recommendations from the PDNA. The two hardest hit public sectors were transport and waterways, making up 75 percent of total damages. To provide immediate support for recovery and reconstruction, the World Bank is providing $51 million through project restructuring and special funding from the IDA Crisis Response Window for the rehabilitation of roads and embankments. The government allocated approximately $58 million in its budget, with specific actions based on the PDNA's findings. In addition, in line with the assessment's recommendation, the World Bank is preparing a Development Policy Operation (DPO) with a Catastrophe Deferred Drawdown Option (Cat DDO), which seeks to advance the disaster risk management policy agenda and provide immediate liquidity in the aftermath of a disaster.

Overall damage and losses by province (billion kips)



Source: UNITAR, Lao PDR, October 22, 2018.

EAST ASIA AND PACIFIC

Policy reform for disaster preparedness

Strengthening disaster management policy in Pacific Island Countries

AT A GLANCE

Countries Pacific Island Countries (PICs): Fiji, Samoa, Tuvalu, Vanuatu

Risks Tropical Storms, droughts, floods, storm surges, earthquakes, volcanic eruptions, tsunamis, sea level rise

Areas of engagement Deepening engagements in resilience to climate change, Enabling resilient recovery

Pacific Island Countries are developing national policy and regulatory frameworks to address the threat of climate and weather-induced disasters.

Effects of Cyclone Winston in Fiji. Photo: World Bank/Vlad Sokhin

Context

Losses from disaster shocks are felt across Pacific Islands. Pacific Island Countries (PIC) such as Fiji, Samoa, Tuvalu, and Vanuatu have been repeatedly hit by tropical cyclones, each time incurring significant losses. For example, Vanuatu alone is estimated to incur an average of $48 million of losses per year due to earthquakes and tropical storms, which represents approximately 6.6% of its GDP. In Tuvalu, 45% of the population were displaced in the aftermath of Tropical Cyclone Pam which hit in 2015.

Given the common challenges that PICs face in the increasing variability of impacts from climate-related hazards, governments in the region are looking to strengthen and harmonize policies, strategies, and regulations for effective disaster risk management (DRM) and climate change adaptation (CCA). Challenges remain in strengthening national policy and regulatory frameworks and in effectively coordinating these efforts. The Africa Caribbean Pacific – European Union Natural Disaster Risk Reduction (ACP-EU NDRR) Program has been solicited by the governments of Fiji, Samoa, Vanuatu and Tuvalu to help strengthen and coordinate these national frameworks. The ACP-EU NDRR Program is an initiative of the ACP Group of States, funded by the EU and managed by the Global Facility for Disaster reduction and Recovery (GFDRR).

Approach

Introduction of customized policy responses to tackle disaster and climate threats

In order to address disaster and climate risks, PICs have upgraded their policies, strategies, and regulations to tackle future threat scenarios by considering the projected effects of climate change into disaster resilience planning. Relevant Ministries and Disaster Agencies in Fiji, Samoa, Vanuatu and Tuvalu have collaborated to develop or strengthen their respective DRM and CCA policies and regulatory frameworks, in order to enhance preparedness and response to climate and disaster shocks.

These efforts have been combined with planned World Bank investments that aim to help countries strengthen legal, policy and other institutional aspects of DRM, as well as provide immediate liquidity in the aftermath of disasters.

EAST ASIA PACIFIC

Policy reform for disaster preparedness

Strengthening disaster management policy in Pacific Island Countries

Results and Achievements

Fiji

A consortium of government ministries, including those responsible for Industry, Trade and Tourism, Education, Heritage and Arts, Rural and Maritime Development, and Disaster Management and Meteorological Services, has finalized the preparation of guidelines for the implementation of the National Building Code. This has in turn strengthened Fiji's capacity to improve the design and construction of single-story houses and schools to prepare for climate and disaster risks. The new guidelines of the National Building Code include practical solutions and illustrations showing best practices for the design and construction of new buildings.

Samoa

The Ministry of Works, Transport, and Infrastructure and the Ministry of Natural Resources and the Environment have worked together to strengthen the country's institutional policy framework for CCA and DRM. This has entailed developing practical solutions, guidelines, and awareness of revised building codes and standards which has increased the country's ability to assess building applications and to check compliance with new building codes. The government has also communicated the new building guidelines to stakeholders in the private sector and reached out to communities to raise awareness of climate and disaster-related risks.

Vanuatu

A multi-pronged policy analysis was conducted to identify areas that need to be strengthened for an effective national DRM and CCA framework to take root. The government revised its National DRM Act and the National Subdivision Policy and developed a Disaster Recovery Framework that will provide advice for implementing post-disaster recovery and "build back better" measures.

Tuvalu

Technical and analytical work was undertaken to review existing DRM policies, plans and regulations to identify potential gaps and identify priority reform actions and to enhance the government's capacity to implement the National Strategic Action Plan for climate change and DRM.

Effects of Cyclone Winston in Fiji. World Bank/Vlad Sokhin

Lessons Learned

Revised DRM and CCA policies have a direct impact on promoting resilient infrastructure

New DRM and CCA strategies represent a policy shift from mitigating damage to addressing the causes of risk across many industries, including the building and construction sectors. This can be seen, for example, in the new Building Act of Tuvalu.

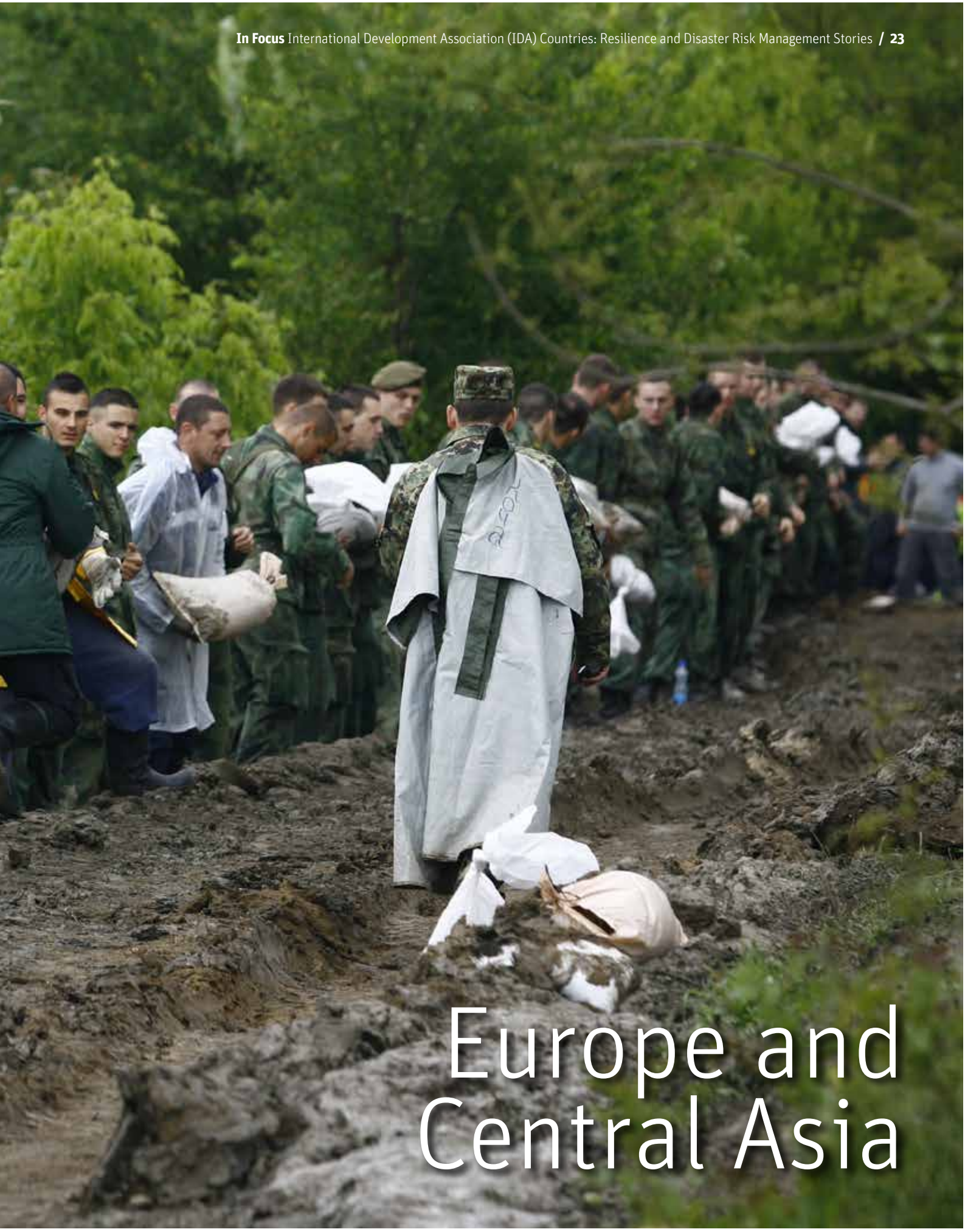
New policies are the result of an inclusive, whole-of-society approach

Each PIC solicited expertise and feedback from a broad representation of societal actors to design the new DRM frameworks. Traditional institutions representing indigenous communities, educational and health experts, and engineers from the private sector worked alongside government ministries, such as Fiji's Ministry of Itaukei Affairs, to promote inclusive and sustainable risk planning.

"The government of Samoa is continuing to deliver on reforms that will strengthen our economy, enhance our resilience to climate change and natural hazards, and reduce the scourge of non-communicable diseases. We are pleased to partner with the World Bank as we work for Samoa's people, guided by our Strategy for the Development of Samoa."

—Hon. Sili Epa Tuioti, Samoa's Minister of Finance

Serbia. Photo: Jose Matheus / Shutterstock.com



Europe and Central Asia

EUROPE AND CENTRAL ASIA

Promoting Resilient Infrastructure

Ensuring post-disaster business continuity for water utilities in the Danube region

Stretching from Germany's Black Forest region all the way to the Black Sea, the Danube region has known more than its fair share of disasters, including earthquakes, droughts, and floods. These disasters have all too often put the region's access to water at risk. Case in point: at the peak of the May 2014 floods around the Sava River Basin, roughly 1 million people in Bosnia and Herzegovina were left without access to drinking water because of disruptions in the country's water supply. In recent years, authorities in the Kosovar capital of Pristina have also been forced to curb water services because of severe drought.

In six countries of the Danube region—Albania, Bosnia and Herzegovina, Croatia, **Kosovo**, North Macedonia, and Serbia—GFDRR has been delivering support to water utility providers to ensure business continuity in the aftermath of a disaster. The key focus of this engagement has been the development and dissemination of a comprehensive water safety and crisis management curriculum in post-disaster contexts for their respective technical and managerial staff. These efforts have been made under the umbrella of the Danube Learning Partnership (D-LeaP), a capacity-building initiative representing water utility providers across the region, in partnership with the World Bank–supported Danube Water Program.

Drawing on the expertise of the International Association of Water Service Companies in the Danube River Catchment Area—a regional platform for knowledge exchange in the water sector—the curriculum covers several key areas in water safety and crisis management. These include risk identification, measurement and mitigation, and the design and implementation of operating procedures for managing disaster events, as well as business recovery plans in their aftermath. Recognizing the value of learning by doing, the curriculum features scenario-based training exercises for decision-making in emergencies.

In an effort to ensure country ownership and long-term sustainability, a technical team, with the support of GFDRR, subsequently provided advice to water utility associations in Bosnia and Herzegovina, **Kosovo**, North Macedonia, and Serbia so that they could take the lead in disseminating the curriculum through both in-person training and virtual lessons in the local language. Overall, these associations have helped distribute the curriculum to over 150 technical and managerial staff at water utility providers in these four countries.

COVID-19 has not spared the Danube region, and it poses a significant challenge to business continuity in the water utility sector. As of the end of fiscal year 2020, GFDRR has been providing support for upgrading the water safety and crisis management curriculum to more strongly incorporate preparedness and response in health emergencies, including a broadened approach to risk assessment. As part of this effort, dedicated webinars have highlighted insights that are most relevant for utility companies in pandemic situations, including the essential elements of preparation during day-to-day operations to ensure rapid emergency response, subsequent crisis management, and, later, recovery.

Credit: ADKOM (Association of public utility services providers of the Republic of North Macedonia). Photo: World Bank.

Lessons Learned

Building local ownership plays a key role in driving the sustainability of resilience efforts. This was proven when the technical team worked closely with water utility associations in four countries to ensure knowledge transfer and develop the skills to lead and disseminate the water safety and crisis management curriculum for the long haul.

"In the state of emergency and declared pandemic, the water safety planning and crisis management training allowed us to propose and immediately implement measures to protect workers in the vital facilities of the water supply and wastewater treatment plant."

—Stojan Eftimov, Crisis Manager at PCU Komunalec, Strumica, North Macedonia

Results in Numbers

Over 150 officials from water utility providers in **4 countries** trained in water safety and crisis management, with a focus on post-disaster contexts

EUROPE AND CENTRAL ASIA

Ensuring a safe learning environment for children

Improving school infrastructure safety in the Kyrgyz Republic

AT A GLANCE

Countries Kyrgyz Republic

Risks Earthquakes, landslides, mudflows, glacial lake outburst floods, and avalanches

Areas of engagement Promoting resilient infrastructure

In the Kyrgyz Republic, the Government is investing in its schools to improve their safety and functionality and ensure that they are more resilient to natural disasters.

80% of schools in the Kyrgyz Republic are vulnerable to earthquakes

Kyrgyz Children at Risk

An estimated 2.5 million students attend over 3,000 public school facilities in the Kyrgyz Republic. There is general knowledge throughout Central Asia of the seismic vulnerability of its residential and school buildings built during the Soviet era.

However, through a recent national-level probabilistic risk assessment, the Kyrgyz Republic was able to quantify and identify regions in the country where the seismic risk is concentrated, including the capital, Bishkek.

The assessment provided compelling evidence of the high vulnerability of the existing school infrastructure. It found that the combined total value of school buildings across the country is estimated to be $1.5 billion.

It also showed that potential fatalities in the education sector are alarmingly high: fatalities were estimated to exceed 7,500 in school buildings, while a lower number is expected in residential buildings.

A New Curriculum for Safer Schools

In 2015, the government established the State Program on Safer Schools and Preschools of the Kyrgyz Republic 2015–2024 to improve the safety of all its 2,222 schools and 806 preschools.

The State Program provides the initial framework to reduce the vulnerability of school infrastructure nationwide, technical and financial support will be required to support the Government to reach their stage.

In addition to safety and resilience challenges, the project aims to improve quality learning environments

in existing facilities through measures such as higher energy-efficiency; updated Water, Sanitation and Hygiene (WASH) facilities; and inclusive education, which are not in adequate condition due to lack of school budget.

GFDRR and the World Bank have provided support to the government in implementing this forward-looking strategy through the Enhancing Resilience in Kyrgyzstan Project.

EUROPE AND CENTRAL ASIA

Ensuring a safe learning environment for children

Improving school infrastructure Safety in the Kyrgyz Republic

Results in Numbers

Improving safety for **2,222 schools** and **806 preschools**

Photo: Nick van Praag / The World Bank

Lessons Learned

Locally applicable solutions enable sustainable management

The program tailors affordable and effective engineering solutions for 3 typical school building types in the country to improve seismic performance to meet international standards. The solutions take into consideration the local constitution environment and the capacity building of the local technical community, so that the solutions can be widely applied in the country by the local technical community.

Finding the most efficient investment plan is a key to scale up the impact

The program develops an intervention strategy and investment plan, enabling the optimization of the safety benefit with limited investment. Informed by the optimized solution, decisions can be geared towards more efficient development of the seismic resilience of schools and benefit as many students as possible.

Involvement of wider stakeholders can load to greater adaptation of the strategy

The program operated under the country's institutional, legal and regulatory framework, and included the participation of key stakeholders involved in school infrastructure. The wide involvement of stakeholders facilitates the building of local capacities to enable a better and wider implementation of the framework.

NEW RETROFIT SOLUTIONS

Affordable and locally-applicable retrofit solutions were designed for 3 of the main types of school buildings in Kyrgyz Republic. These solutions are design in an incremental approach to efficiently ensure satisfactory seismic performance according to different conditions.

STRONGER ANALYSIS

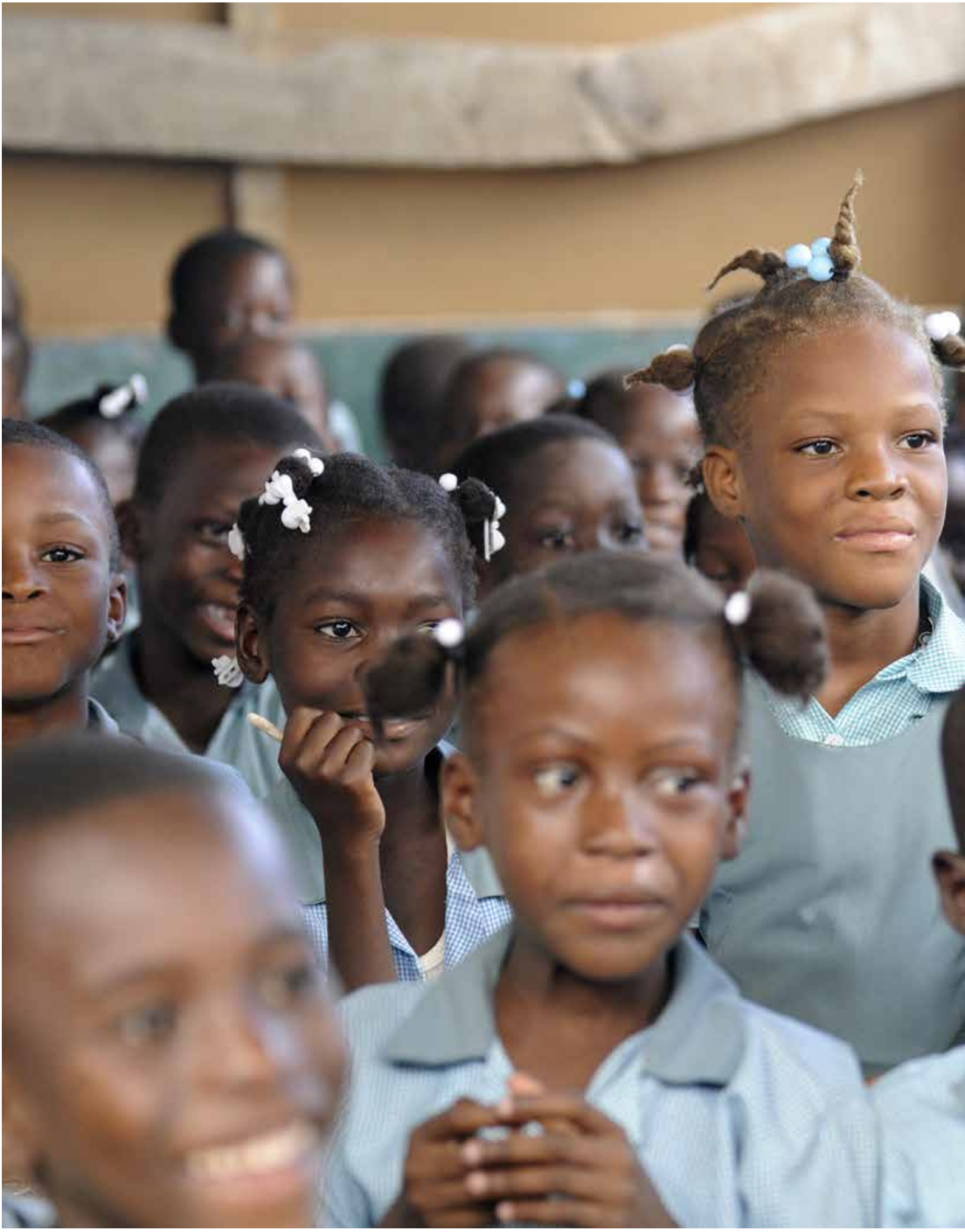
The project introduced a new tool to conduct seismic risk assessment, intervention strategy optimization, and investment prioritization for school facilities. The tool has been applied to 300 eligible schools to inform the decision of investment plan. The analysis produced a solution that would enable nearly 80% of the schools to become seismically resilient with about 30% of the total investment needed.

LIVES AND FUTURES PROTECTED

Informed by the analytical results and following the optimized solution, 10 schools with about 8,500 students are estimated to benefit in the short term with $12 million investment under the project, covering 4 oblasts with the highest seismic risk. The benefits include seismic safety, energy efficiency, and WASH improvements.

"I really knew little about these problems before that, but today I was convinced that this project is not easy one. We need to engage fully, and at the same time, this project will provide a guarantee to ensure the safety of our students and our population."

—Kalys Ahmatov, Deputy Minister of MoES of the Kyrgyz Republic.



Haiti. Photo: McIninch

Latin America and the Caribbean

LATIN AMERICA AND THE CARIBBEAN

Building Resilience at the Community Level

Applying behavioral science to disaster risk management in Haiti

Haiti's geographic location makes it highly exposed to hurricanes, and climate change is increasing their frequency and intensity. And while much remains to be done, the country has been making headway in strengthening its resilience to hurricanes and other adverse events by developing early warning systems that provide local populations with immediate and actionable information to prepare for and minimize the impact of these events.

Research has shown that many fatalities can be prevented if people evacuate to a safer place in a timely fashion. Notwithstanding the progress in improving Haiti's early warning systems, behavioral barriers often interfere with people's decision-making when they are faced with a catastrophic event.

With the support of the ACP-EU Natural Disaster Risk Reduction Program managed by GFDRR, a World Bank technical team dug deep into these behavioral barriers, with the goal of identifying opportunities for strengthening the effectiveness of early warning and evacuation systems. In Haiti, these systems are managed by Municipal Civil Protection Committees (Comités Communaux de Protection Civile, or CCPCs) under the direction of the country's Civil Protection General Directorate (Direction Générale de la Protection Civile, or DGPC), utilizing a range of communication channels including radio and door-to-door visits, as well as short message services (SMS). Haiti has a cell phone penetration rate approaching 60 percent.

Through interviews and focus groups carried out in Port-au-Prince and in the Nippes and South departments of Haiti, the team identified five main behavioral barriers to evacuation:

1. Often the population does not receive the alert messages.
2. When the information does arrive, messages are not always presented in a format that is easy to understand.
3. Even when the information arrives and is understood, sometimes people do not internalize the risk level. For instance, the average person may struggle to believe that a hurricane, which is perceived to be a low probability event, will hit their home, or they may stay behind to protect their livestock.
4. Even when people internalize risk levels, structural challenges—such as the lack of a shelter close to their homes or lack of transportation—make it impossible to heed warnings.
5. Moreover, people who have had a bad experience with shelters might be hesitant to evacuate because they are worried about their safety in the shelter. For example, they may be concerned that the structure may not be resilient enough or safety measures in the management of the shelter may not be well implemented.

Drawing on these findings, the team developed strategic recommendations for strengthening Haiti's early warning systems. These include simplifying warnings and messages, improving the timeliness of dissemination, and promoting trust between local populations and the CCPCs, which play a key role in the communication of messages.

These recommendations are already informing and catalyzing resilience and disaster risk management efforts across Haiti. Recently, with support from the EU-funded Caribbean Regional Resilience Building Facility, managed by GFDRR, the country's DGPC launched a national communications campaign to build awareness and preparedness during the 2020 hurricane season through a variety of platforms—including national and local radio, SMS, social media, and other online platforms in audio, video, text, and graphic formats. As part of the campaign, over 1 million people have viewed a music video featuring a song and dance number by popular Haitian artists that conveyed the importance of being prepared for hurricanes and other disasters.

At the same time, the World Bank's IDA-funded Strengthening Disaster Risk Management and Climate Resilience Project is putting an emphasis on understanding the mindset and beliefs of target populations for its comprehensive resilience engagement in Haiti. With support from GFDRR and in partnership with the government of Haiti, this project is helping the country simplify early warning system messages, including the use of salient visuals, in addition to strengthening the training of CCPCs to facilitate evacuation. This project is also financing the construction of multifunctional emergency shelters while integrating the behavioral insights in the design and functional aspects, ensuring not only the resilience of the infrastructure but also the safety of the people evacuated.

Haiti's Municipal Civil Protection Committees, under the direction of the Civil Protection General Directorate, play a key role in implementing the country's early warning and emergency evacuation systems. Photo: ©Vincent Theodore.

Lessons Learned

People may not evacuate despite warnings because they may not understand the messages and do not trust the messengers. Accordingly, a national communications campaign, informed by the behavioral study, featured popular Haitian artists who conveyed the importance of being prepared for disasters through the relatable and accessible medium of song and dance.

"This activity was key to build awareness of the risks associated with hurricanes and strengthen communication in preparation for an emergency situation."

—Lolo of the band Boukman Eksperyans, one of the artists involved in the communications campaign informed by the study

Results in Numbers

Over 1 million people have viewed a music video featuring a song and dance number by popular Haitian artists that drew on the behavioral study to convey the importance of being prepared for hurricanes and other disasters

LATIN AMERICA AND THE CARIBBEAN

EU-Funded Programs

Advancing inclusive resilience-building in Saint Lucia's critical infrastructure and beyond

Located on the southern edge of the Atlantic hurricane belt and characterized by a steep and rugged topography, the Caribbean island nation of Saint Lucia is all too familiar with the devastation caused by natural hazards, including hurricanes, landslides, flooding, droughts, and earthquakes. Most recently, in May 2020, the government of Saint Lucia declared a water emergency amid growing imbalances between water supply and demand, a situation the country is observing with increasing frequency.

Recognizing the challenge posed by intensifying disaster and climate risks to Saint Lucia's development prospects, the national government is strongly committed to charting a more resilient future for its citizens, including the implementation of climate change adaptation strategies for critical infrastructure and economic sectors. With the support of the ACP-EU Natural Disaster Risk Reduction (NDRR) Program, which is managed by GFDRR, Saint Lucia has been making strides toward not only strengthening the resilience of public infrastructure, but also ensuring that its resilience-building efforts put the needs of the poor and socially vulnerable front and center.

A technical team, with the support of the ACP-EU NDRR Program, has been providing support to Saint Lucia's government in its efforts to understand and tackle resilience gaps across the country's critical infrastructure.

The team has worked closely with the Saint Lucia Solid Waste Management Authority to develop a deep dive assessment, policy, and action reform plan for the country's solid waste management system. The assessment and action plan, which will inform the government's solid waste management strategy, calls for the establishment of community-based collection systems near residences that are not located on roadways where authority contractors collect waste. These efforts are expected to increase public awareness around the roles and responsibilities of waste generators in properly managing their waste, and to optimize basic waste collection and disposal services and infrastructure to ensure that core solid waste management services are provided in an environmentally sound and sustainable manner.

Furthermore, the team has also engaged with the Saint Lucia Water Resource Management Agency to provide analytical support to update the 2004 National Water Policy. This analytical work has highlighted the tension between outdated land use management regulations and the protection of water supply sources for potable use, and the need to improve the governance both of water resources management and water supply, and of sanitation services. While focusing on the long-term planning of water infrastructure, the analytical work also considered the impacts of aging water supply infrastructure and inefficiencies in water usage and service delivery, among other key challenges.

In conjunction with these initiatives, the technical team, with support from the ACP-EU NDRR Program, has also engaged with the government of Saint Lucia on analytical work that will inform the country's efforts to ensure that the poor and socially vulnerable are not left behind in the country's resilience-building. Efforts that have been completed include the development of a shocks module that was incorporated into the country's living standards measurement survey, which was used by national authorities to quantify the impact of past disasters.

This suite of analytical work has informed the targeting and implementation of the government's social protection measures—a key pillar of the national resilience program. For instance, the social safety net targeting instrument was updated to better identify poor and vulnerable households, including female-headed households. This will enable the government to provide focused support to those most at risk and more likely to experience debilitating effects from disasters. The analytical work is also informing initiatives to improve farmers' access to climate risk finance through the Climate Adaptation Financing Facility (CAFF), a component of the World Bank's IDA-funded Disaster Vulnerability Reduction Project.

As Saint Lucia wrestles with the impacts of COVID-19, the national government has been working with the technical team to adapt its engagement to respond to the pandemic. For instance, the team has been providing technical assistance to ensure the resilience of critical infrastructure works, including medical facilities, which are part of the government's efforts to respond to COVID-19 and to stimulate the economy amid the downturn.

The Marchand River Bed. Department of Infrastructure Engineer (center) flanked by staff of the Project Coordinating Unit (PCU). Photo: World Bank.

Lessons Learned

Effective targeting of disaster risk management and resilience measures is critical to ensure that these measures do not leave vulnerable populations behind. Accordingly, a key priority for the analytical work was to enable the government of Saint Lucia to update its social safety net targeting instrument to better identify poor and vulnerable households, thus helping ensure focused support for those most likely to experience debilitating effects from disasters.

"Over the hurricane seasons, when Saint Lucia has actually been hit by a hurricane, our infrastructure that has really been damaged has always been the highest cost of government rebuilding. With new infrastructure that is being built, . . . we've taken that into consideration from a climate perspective to ensure that we can reduce the risk of very high hurricane storms or Category 5+ storms and sea-level rise and everything else."

—Nadia Wells-Hyacinth, Director of Financial Administration, Government of Saint Lucia

LATIN AMERICA AND THE CARIBBEAN

Caribbean nations work together for regional resilience

Upgrading Caribbean disaster preparedness and response capacities

AT A GLANCE

Countries: Dominica, Grenada, Saint Kitts and Nevis, Saint Lucia, Saint Vincent and the Grenadines

Risks: Tropical storms, hurricanes, storm surges, floods, rising sea levels

GFDRR Areas of Engagement: Deepening engagements in resilience to climate change, Enabling resilient recovery

National disaster management agencies in the Caribbean are overcoming challenges to the implementation of effective emergency preparedness and response systems.

Understanding Risk Caribbean Conference. Photo: World Bank

Institutional obstacles are preventing effective responses to disaster risk

The Caribbean region is confronted with an increasing number of devastating storms and extreme weather events, as evidenced by the increasing length of the Atlantic hurricane season during which these storms can form, as well as their severity. These events require advanced government and institutional capacities to adequately prepare for an immediate response in their aftermath. Yet many of the Small Island Developing States (SIDS) in the region are confronted with significant obstacles in designing and maintaining such a system. These obstacles derive from insufficient human and financial resources being invested in these countries' respective National Disaster Management Organizations (NDMOs), ranging from deficiencies in their institutional frameworks to a lack of coordination between these agencies.

The common challenges faced by these countries require a regional response which can guide coordination on disaster management mechanisms. To this end, the Caribbean Disaster Emergency Management Agency (CDEMA), a regional inter-governmental agency for disaster management in the Caribbean community, is spearheading an initiative to enhance disaster preparedness in Eastern Caribbean countries, namely Dominica, Saint Kitts and Nevis, Grenada, Saint Vincent and the Grenadines and Saint Lucia. These countries are undergoing a comprehensive institutional evaluation of their respective NDMOs to identify weaknesses in their preparedness and response systems, and to build a framework that will support future regional cooperation. This initiative is supported by the Africa Caribbean Pacific – European Union Natural Disaster Risk Reduction (ACP-EU NDRR) Program, an initiative of the ACP Group of States, funded by the EU and managed by the Global Facility for Disaster Reduction and Recovery (GFDRR).

Designing a regional strategic roadmap and investment plan

In order to guide and coordinate these countries' efforts to improve their disaster management capacities, an institutional roadmap is being developed to help each country's respective NDMO to address its gaps and deficiencies. This roadmap is being informed by the results of an institutional assessment of each NDMO that was conducted by a series of in-person interviews and questionnaires between national disaster experts and program representatives. Based on the evaluation of existing legal and institutional policies, facilities, equipment, and personnel, each assessment will inform the roadmap on the most viable paths for reform. For instance, in Saint Lucia, the assessment has yielded recommendations for strengthening cooperation with the private sector and deepening knowledge of private sector insurance schemes.

Castries, Saint Lucia. Photo: Flavio Vallenari.

One of the common weaknesses identified by the institutional assessments was the NDMOs' insufficient capacities in collecting and managing actionable data and information. At the request of the countries that underwent the assessment, the project received additional funding to undertake a series of data collection training workshops to address this gap. These capacity-building trainings are being held with the objective of handling both the Covid-19 crisis in the Caribbean and the hurricane season.

Results and Achievements

Institutional assessment reports were developed for the five participating Caribbean island states, highlighting several policy gaps and recommendations. For example, it was identified that Saint Vincent and the Grenadines would require leadership and co-ordination at the strategic level in order to drive reforms, promote engagement of stakeholders and influence experts, emergency responders and the public. Key institutional bottlenecks and blockages were also identified in Saint Lucia and Dominica, such as outdated legislation and the lack of relevant training and investment in human resources.

The 5 institutional assessment reports were presented and discussed with national stakeholders during 5 country-level situational awareness workshops, leading to the training and awareness-raising of 147 people, including 45 women. Multiple targeted follow up sessions were also organized with national stakeholders in order to finalize the outputs.

Lessons learned

A participatory approach combining analytical and capacity building outputs ensures better end-products

Country consultations have been essential to develop the five country-level situational awareness reports, through workshops and bilateral follow-up meetings. This approach has produced detailed information on each country's disaster preparedness and response capacities, such as the growing expectations gap between each agency's capacity to meet increasingly diverse disaster management responsibilities and their own human and financial resources, and the development of actionable recommendations.

Institutional reforms require inputs from policy as well as technical levels

It is important to engage not just stakeholders within disaster management agencies through technical assessments and trainings, but also involve policymakers within the government who are likely to determine the long-term success of these institutional reforms. To define priorities for investment, gaining input from the ministries of finance in each country of engagement is crucial to guarantee the sustainability of these reforms.

LATIN AMERICA AND THE CARIBBEAN

Strengthening hydrometeorological services to curb risk

Managing disaster risk in Central America

AT A GLANCE

Countries Honduras and Nicaragua

Risks River floods, hurricanes, tropical storms, landslides, long term economic and fiscal impacts

Areas of engagement Strengthening hydromet services and early warning systems

As disaster risk intensifies in Central America due to the impact of weather events and climate change, Honduras and Nicaragua are taking action to be better prepared for natural hazards by modernizing hydromet services

Flooding in the north of Honduras on the Ulua River has displaced many from their small homes. (Photo: World Bank)

A Transboundary Approach for Similar Regional Challenges

In Central America, adverse hydrometeorological events are the most frequent disasters generated by natural hazards in Honduras and Nicaragua. From 1990 to 2012, it is estimated that annual economic losses due to weather-related disasters—including hurricanes, tropical storms, floods, and landslides—were equivalent to 2.8 percent and 1.9 percent of GDP for Honduras and Nicaragua, respectively.

Both Honduras and Nicaragua are exposed to hurricanes that frequently strike the countries, resulting in extensive flooding, landslides, and destruction from strong winds. This is treacherous for the rural economies, which rely on income in the agriculture sector, leaving populations in an extremely vulnerable position. Moreover, these countries are consistently facing high levels of physical and financial risk and losing hundreds of lives every year because of extreme weather events such as intense storms, flooding events, and hurricanes that have left economic damage in the billions of dollars. Specifically, in Nicaragua, Hurricane Felix (2007) caused damage and losses equivalent to 14.4 percent of GDP, while the heavy rains of 2007 in the northwestern region and the 2011 Tropical Depression 12E eliminated 3 percent and 6.8 percent of GDP, respectively

In Honduras, Hurricane Mitch (1998) represented the worst disaster in the country's recent history, affecting 90 percent of its territory, leading to over 5,700 deaths and 8,000 missing as well as displacing nearly half a million individuals. The overall damage amounted to 81.0 percent of GDP, and subsequent extreme meteorological events since Hurricane Mitch would suggest that Honduras' disaster vulnerability is on the rise. In Honduras alone, between 1980 and 2010, over 15,000 people were killed and over 4 million were affected by disasters, while economic damage amounted to US$4.5 billion.

Applying Hydromet Expertise and Investment

More than 15 million citizens in Central America are at risk of not having access to public weather services, timely early warning systems, or hydrometeorological information. The lack of access to this information leads to not having the ability to be prepared. Ultimately, having these systems and processes in place allows countries to plan, prepare, and if necessary, evacuate in a disaster situation.

During 2015–19, both countries embarked on an effort to strengthen the institutional capacities at the national level to support early warning systems for meteorological, hydrological, and climate-related hazards in Honduras and Nicaragua, including at the subnational levels in the Nicaragua Caribbean coastal and Rio San Juan regions and the Honduras Chamalecón and Ulúa River basins.

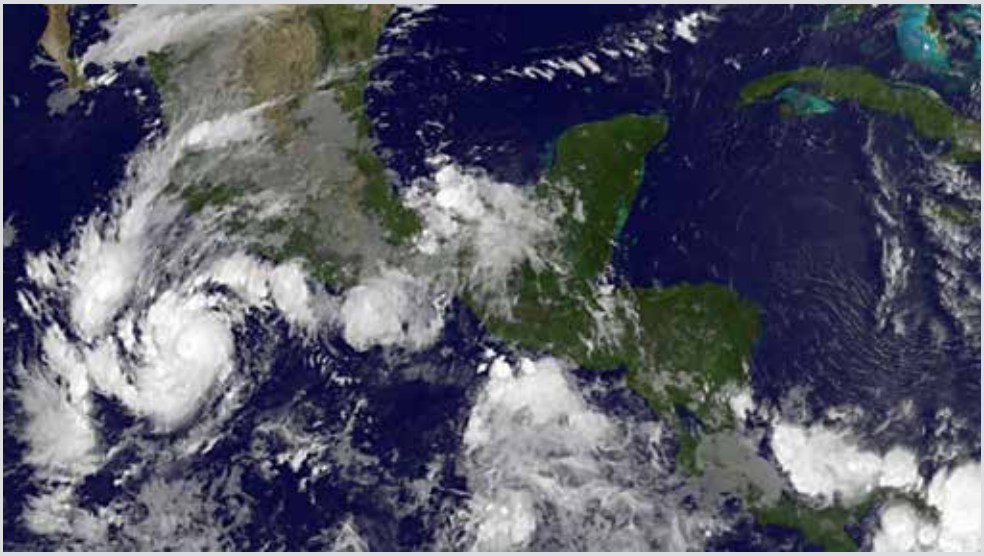


Photo: NASA

Results in Numbers

More than **7 million** citizens now have access to weather and forecasting information

A three-year project was implemented to develop access to basic hydromet information for 4.5 million in Honduras and 3 million in Nicaragua through low-cost, high-impact activities, such as newly digitalizing all hydromet records, developing a hydromet database, and creating a roadmap and strategy for how to improve hydromet services in the coming years. The countries aimed to develop a strong hydromet and early warning system so they could act quickly against an extreme weather event. In the end, having the most up-to-date and reliable information is key for a country and its citizens.

The Government of Japan, through the Japan–World Bank DRM Program, provided a US$1.45 million grant to Honduras and Nicaragua to support their hydromet modernization efforts. Building on the experience of Japan in identifying, predicting, and managing the risks posed by weather hazards, Honduras and Nicaragua developed modernization plans for their hydromet infrastructure and improved their weather forecasting capabilities. Overall, the investment helped not only to benefit more than 7 million people to give them access to hydromet information, but also leveraged more than US$13 million dollars between the two countries to finance more activities described in the hydromet modernization plans.

"Previously when we were asked, for example, a map with the accumulated rainfall of recent days, we took several hours to produce it. Now with the MCH [the WMO Meteorological, Climatological and Hydrological database management system] it is something that is produced and published on the website automatically."

—Francisco Argueñal, Chief Meteorologist of the Honduran Emergency Commission

Lessons learned

The Importance of Modernization Plans

The development of modernization plans proved to be a practical way to help Honduras and Nicaragua improve their public weather services, invest in disaster-related early warning systems, and strengthen their hydrometeorological information and decision support systems for climate-dependent sectors.

The Criticality of Installing a Database

Using the low-cost database platform initiated the transformation and modernization of both national institutions. The development of hydromet service websites proved useful to increase the visibility of the National Meteorological and Hydrological Services. These websites could have an important impact in both countries to make the case for improved hydromet services to gain the support of users and beneficiary institutions.

MODERNIZATION PLANS DEVELOPED

The Modernization Plans developed through this grant established a framework toward strengthening early warning systems and improved the weather services provided to end users in both countries.

OPERATIONAL PROCEDURES IN PLACE

Through this grant, manuals and procedures were developed to help both governments improve the accuracy of the current weather forecasts made by introducing the use of appropriate methods, tools and operational procedures, and recommendations to implement concrete actions to improve weather forecasts and capabilities.

DATABASE AND WEBSITES OPERATIONAL

Websites allowed real-time and historical information to be managed and stored with a new meteorological, hydrological, and climate database management system.

Afghanistan. Photo: Jose_Matheus / Shutterstock.com

South Asia

SOUTH ASIA

Engaging with citizens and communities to build a resilient Afghanistan

For much of its recent history, Afghanistan's development progress has been set back by conflict. Eager to turn the page and rebuild the bonds of trust that have frayed over the years, the national government has prioritized the implementation of the Citizens' Charter Afghanistan Project (CCAP), a comprehensive program to put the needs and aspirations of citizens front and center in the development of the country's infrastructure and service delivery.

In line with the Citizens' Charter, the national government, with the support of GFDRR and the World Bank, has been making marked progress toward strengthening community-based disaster risk management practices in Afghanistan. No stranger to disaster, the country is highly vulnerable to natural hazards such as flooding, earthquakes, avalanches, landslides, and droughts.

In 10 communities in Badakhshan, Panjshir, and Kandahar provinces, local teams have gathered firsthand information about the disaster risks and challenges people face and, just as critically, the opportunities for building resilience at the community level. Focus group discussions involved over 800 participants, nearly 40 percent of whom are female. Alongside the focus group discussions and key informant interviews, staff from the Disaster Risk Management (DRM) Resource Center (piloted at the Ministry of Reconstruction and Rural Development) have been conducting field surveys to document and better understand past hazard events.

Drawing on insights from these efforts as well as Afghanistan's repository of geospatial disaster data in the country's Geonode platform, which has also been supported by GFDRR, the DRM Resource Center has developed multi-hazard risk profiles for each of the 10 communities. These profiles include maps of buildings and farmlands that identify residents and categorize the different levels of risk in each of the communities.

With feedback from the wider population, community development councils have begun using these profiles to inform deliberations around the identification and prioritization of resilience measures to be undertaken by the Afghan government under its CCAP. For instance, the Allani council in the northwest region of the Darayim District, Badakhshan Province, has identified the construction of a protection wall against floods, landslides, and avalanches as a priority investment for the Ministry of Rural Rehabilitation and Development. To ensure that council members and the wider population are able to participate fully in the deliberations, the risk profiles have been converted to a video format, narrated in both Dari and Pashto.

With an eye for long-term sustainability, GFDRR has also supported training and capacity-building activities that complement these efforts for community members. Within each local team, a leader has been trained and recruited to help ensure consistent engagement and buy-in from the community. At the same time, community development councils and community champions have received training in key disaster risk management concepts and principles.

GFDRR and World Bank support for community-based disaster risk management in Afghanistan is aligned with a wider portfolio of resilience engagements in the country. For instance, several community leaders have also participated in training to operate and maintain low-cost and locally assembled weather stations as part of ongoing support toward strengthening the country's hydrological and meteorological (hydromet) and early warning services. Coupled with weather boards located in mosques, along with a free mobile weather application in Dari and Pashto to use on a phone, these efforts are helping ensure that Afghan citizens in the 10 communities have access to local weather data and forecasts. Furthermore, insights and lessons from the community-based DRM engagement are also informing the development of the IDA-funded, Drought Early Warning, Finance, and Action Project in Afghanistan, which is currently under preparation.




Clockwise top to bottom: Focus group discussions with female Community development council members in Tolat village. Weather station installation and training in Naw Abad Pingani during the Bridge Project. DRM and Risk Profile Review during Bridge Project. Review of Risk Profiles with Community development council. Photos: World Bank.

Lessons Learned

Developing a gender-sensitive approach to community-based disaster risk management requires strategies for engaging women and girls that are appropriate to the local context. In this work in Afghanistan, the technical team helped cultivate a network of male and female allies that was crucial to ensuring that women and girls' needs and capacities were fully considered in the resilience-building efforts.

Results in Numbers

Over 800 citizens in 10 communities across 3 provinces

informing the identification and prioritization of resilience measures by the Afghan government considered in the resilience-building efforts

SOUTH ASIA

Scaling Up the Resilience of Cities

Strengthening risk data for urban resilience in Bangladesh

Over much of the past decade, Bangladesh's development prospects have been buoyed by a record of strong and sustained economic growth. Yet even as the country's bustling urban areas, including the capital city Dhaka, have helped fuel that growth, rapid and unplanned development is leaving millions of people more vulnerable not only to natural hazards, including cyclones, floods, and earthquakes, but also to the impacts of climate change.

In response to this challenge, Bangladesh has embarked on a comprehensive urban resilience agenda. The government strongly recognizes the importance of risk data for informing and driving that agenda. Under the Japan-World Bank Program for Mainstreaming Disaster Risk Management (DRM) in Developing Countries, GFDRR has been supporting national efforts to strengthen the infrastructure for collecting, sharing, and analyzing risk data.

Until recently, government agencies as well as the private sector in Bangladesh had been producing vast amounts of geospatial data, but largely without the ability to share these data seamlessly without delay. Accordingly, a key focus for GFDRR's engagement has been to provide technical and financial support toward the development and sustainability of GeoDASH, Bangladesh's first ever open source geospatial data collection and sharing platform. As of the end of fiscal year 2020, nearly 3,000 users representing over 50 public, private, and civil society organizations have shared data, making available 740 data sets from road network maps and building footprints to the location of water, gas, and utilities in a secure platform. All of these data sets are available to the public in a widely usable format.

Government agencies in Bangladesh, including in the city of Dhaka, are now leveraging the GeoDASH platform to reduce duplication and minimize costs in their geospatial data collection efforts. The Dhaka North and South City Corporations, the Capital Development Authority, and the Dhaka Water Supply and Sewerage Authority, for instance, have agreed to utilize the platform to collaborate on mapping roads as well as on gathering data on building footprints, water supply, and sewerage facilities.

At the same time, government agencies are also making use of GeoDASH's web application, which enables users to visualize and analyze the data to inform their resilience planning. For example, through this application, Bangladesh's Local Government Engineering Department has been using geospatial layers from the Department of Disaster Management's multi-hazard risk and vulnerability assessment to produce cyclone risk maps for critical infrastructure. These maps will, in turn, inform its investment plans for cyclone shelters in both urban and rural areas of Bangladesh.

To ensure that the government of Bangladesh is able to sustainably utilize GeoDASH in its resilience efforts, GFDRR has also been supporting a comprehensive training program for officials on how to use and administer the platform. As a testament to its commitment, the national government, which manages GeoDASH, has integrated the platform into its National Spatial Data Infrastructure policy.

GFDRR's support for strengthening risk data is one of a range of urban resilience engagements with the government of Bangladesh. For instance, under the Japan-World Bank Program for Mainstreaming DRM in Developing Countries, technical assistance is currently being provided toward developing a strategic environmental assessment of Dhaka, now in its final stages. The assessment, which makes use of the data layers uploaded in GeoDASH, will integrate environmental concerns into the government's ongoing plans to enhance resilience in Dhaka—such as retrofitting public buildings and updating land use plans and building codes. Furthermore, GFDRR has partnered with the World Bank on the $173 million IDA-funded Bangladesh Urban Resilience Project, a multisectoral disaster risk reduction program that has been informed by geospatial data analysis through GeoDASH.

Bangladesh, busy Mirpur 2 road flooded after heavy rainfall. Photo: SO Photography.

Lessons Learned

Despite increasing interest among both public and private sector stakeholders in Dhaka to exchange critical geospatial data, many had hesitated to do so, in part because of privacy and security concerns. Accordingly, GeoDASH was established in line with best practices in data privacy and security; for instance, it allows organizations to utilize the sharing platform while limiting other users' ability to see more sensitive data uploaded to the platform.

"If Bangladesh is to thrive, we must make our cities more resilient, and we must do so quickly. Through this project, we expect to have an impact on the long-term disaster resilience of the urban centers of Bangladesh."

—Abdul Latif Helaly, Chief Engineer, Capital Development Authority (RAJUK) and Project Director, Bangladesh Urban Resilience Project

Results in Numbers

Nearly 3,000 users representing over 50 public, private, and civil society organizations have shared data on the GeoDASH platform, **making available 740 data sets**—from road network maps and building footprints to the location of water, gas, and utilities.

SOUTH ASIA

Multi-Donor Trust Fund

Strengthening health emergency preparedness and response in South Asia

In recent years, the countries of South Asia have made steady, if uneven, progress toward building robust health emergency and preparedness systems that will be critical to ensuring a healthier, brighter future for all their citizens. Recognizing the often mutually reinforcing challenges posed by public health threats and disaster and climate risks, GFDRR has been a partner in that effort, drawing on the fundamental pillars of the facility's work, including risk identification, risk reduction, and preparedness.

As COVID-19 unfolded across South Asia in the second half of FY20 and threatened to roll back the region's hard-won gains, GFDRR's engagement, which has since adapted to the evolving needs of a pandemic situation, has become more important than ever.

The countries of South Asia have a long history of dealing with health emergencies—from the global H1N1 pandemic in 2009 to the dengue outbreaks in **Bangladesh** and **Pakistan** in 2019. In the first half of FY20, a key focus for the region's technical team, supported by GFDRR, was to distill and assess lessons learned from the experiences of four countries: **Bangladesh, Bhutan, Nepal,** and **Pakistan**. Now in its final stages of development, the multi-country report will highlight the importance of a holistic approach to resilience that incorporates public health, disaster risk, and climate change considerations.

This critical work was well underway when the impacts of COVID-19 began to be felt in South Asia. At the request of national governments, the technical team began to work closely with key officials in five countries: **Bangladesh, Bhutan, Maldives, Nepal,** and **Pakistan** to strengthen national efforts to respond to the pandemic. A main thrust of this engagement was to support the design and implementation of the World Bank's COVID-19 lending and technical operations in South Asia.

For example, in Pakistan, collaboration between the team and their Pakistani counterparts in the Ministry of National Health Services Coordination and Response helped pave the way for the design and early implementation of the IDA-funded Pandemic Response Effectiveness Project in the amount of $200 million, of which $100 million is provided through the World Bank Group's COVID-19 Fast-Track Facility. Under this project, efforts are underway to bolster Pakistan's response to the pandemic while also strengthening national systems for public health preparedness.

Meanwhile, in **Bhutan**, the team engaged with national government officials, including the Ministry of Works and Human Settlements, the Ministry of Health, and the Department of Disaster Management, to ensure that the country's new, $14.8 million Development Policy Financing with Catastrophe Deferred Drawdown Option (Cat DDO) program, funded by IDA, would be able to provide additional liquidity to the government of **Bhutan** not only in the event of a disaster induced by natural hazards, but also in the case of a public health emergency such as the current crisis.

In line with a recommendation from the forthcoming multi-country report, the technical team has also been engaged with their government counterparts in **Bangladesh, Bhutan,** and **Pakistan** to ensure that countries have appropriate plans in place to tackle the next health emergency. Specifically, this includes pandemic plans in **Bhutan** and **Bangladesh**, and the National Action Plan for Health Security in **Pakistan**.

In **Bhutan**, the team supported their government counterparts to revise the National Influenza Preparedness and Response Plan, in alignment with the country's 2016 Health Emergency and Disaster Contingency Plan (HEDCP) as well as the National Disaster Management Act of 2013. At the request of the national government, standard operating procedures have been developed that provide practical guidance for how to carry out the plan, which covers key areas of pandemic preparedness such as surveillance and outbreak response.

In a testament to the government of **Bhutan's** commitment to address the mutually reinforcing challenges posed by public health threats and disaster and climate risks, the HEDCP mandates that all hospitals should develop early warning systems, carry out vulnerability assessments, and facilitate the capacity-building of health workers on emergency and disaster management.

March 20, 2020, Kathmandu, Nepal, amid concerns of COVID-19, people leave the city. Photo: Subash Shrestha/Pacific Press/Sipa USA.

Lessons Learned

Given the often mutually reinforcing challenges posed by public health threats and disaster risk, there is a pressing need to break down the silos that all too often prevent effective collaboration and coordination between the global health and disaster risk management fields. As the world grapples with COVID-19, GFDRR, as shown by its record of partnership in South Asia, is well positioned to advance the dialogue between the two sectors—with an eye toward a holistic approach to resilience that integrates public health, disaster risk, and climate change considerations.

SOUTH ASIA

Multi-Donor Trust Fund

Building a resilient energy sector in Afghanistan

In its drive to achieve broad-based and inclusive development, Afghanistan has been making marked progress in ensuring a reliable and sustainable energy supply for its citizens. The country is particularly susceptible to natural hazards like floods, droughts, and earthquakes, and the national power supply remains highly vulnerable to disaster risk; in 2015, an earthquake of 7.5 magnitude on the Richter scale caused widespread power outages in the capital of Kabul.

In partnership with the Afghan government, including the Ministry of Energy and Water and the national power utility (DABS), GFDRR has been supporting efforts to enhance the resilience of the country's energy system. In view of Afghanistan's diverse energy mix, these engagements span the country's power sector, from the grid-based system to solar to hydropower.

GFDRR is supporting vulnerability assessments of the resilience of the country's preexisting and planned energy facilities, including solar power plants, wind farms, and hydropower plants. The assessments are designed to analyze the impacts of natural hazards and climate change and include projections of risk over a 50- to 100-year period that covers the expected lifespan of these facilities.

Several technical vulnerability assessments have been completed, and these are already beginning to shape energy sector planning and investments by the Afghan government, as well as key development partners such as the World Bank and the International Finance Corporation. For example, the identification of hazard risk levels in an assessment of planned solar plants and wind farms is helping the Afghan government to identify the most suitable sites for these facilities, and to design appropriate climate adaptation and risk mitigation measures.

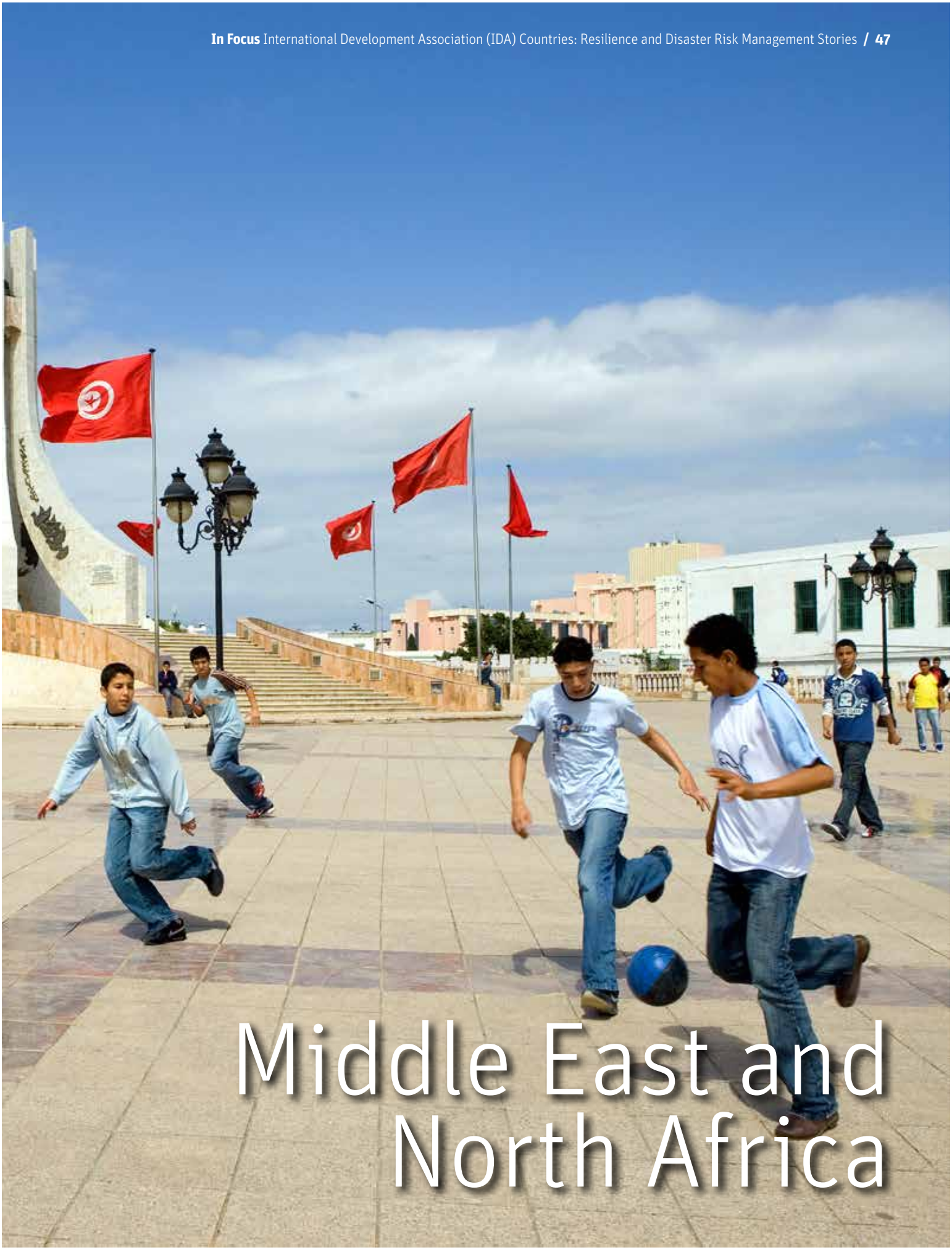
A team of specialists supported by GFDRR is providing technical assistance to Afghan government officials to help them apply the findings from the assessments. For instance, the team organized a training course in Kabul for the Afghanistan Land Authority (ARAZI), which covers social, environmental, and geophysical criteria for siting new solar plants and wind farms, among other key topics.

A team of specialists supported by GFDRR organized a training course in Kabul for the Afghanistan Land Authority (ARAZI). Photo: World Bank.

As this initiative enters a new phase, a key focus moving forward will be the development of an action plan for resilient energy in Afghanistan in collaboration with local partners. The plan will define and prioritize a set of measures to enhance the resilience of energy systems, covering key areas such as energy production diversification, renewable energy development, and water resource management. A vision paper for the resilient development of solar power in Afghanistan has already been produced and will inform the broader action plan.

Results in Numbers

Risk projections for Afghan energy sector for up to **100 years**



Middle East and North Africa

Tunisia. Photo: Gim42

MIDDLE EAST AND NORTH AFRICA

WORLD BANK BLOGS

Multi-Donor Trust Fund

From challenges to opportunities: Rapid Needs Assessments as entry points for building resilience

Balaballa, Djibouti residents after the floods caused by Cyclone Sagar. Photo: Karima Ben Bih/World Bank

In May 2018, tropical cyclone Sagar, accompanied by heavy rains and flash floods made landfall near Djibouti-Ville and its major suburb, Balbala. Three months later, Tunisia was hit by two waves of record-high levels of torrential rain and serious floods. Djibouti was again affected by heavy rains in November 2019 resulting in flash flooding. Faced with these adverse natural events, both the governments of Djibouti and Tunisia requested support from the World Bank in conducting Rapid Needs Assessments (RNAs) or rapid Post-Disaster Needs Assessment (PDNA), which are conducted immediately after the onset of a disaster to evaluate its impacts in the affected areas and the associated recovery needs.

The purpose of the Rapid Needs Assessments or rapid Post-Disaster Needs Assessment is to perform a broad-based assessment that can help governments identify the critical impact and resulting priority needs and interventions in a matter of days instead of conducting a detailed analysis that might take months. Such assessments are government-led with support from international donors, including the World Bank. RNAs and PDNAs rely on data collected locally by the government in the aftermath of the disaster, satellite imagery analysis (if available), as well as percentage-based estimation models in case of access limitations. Governments can use them as analytical basis to prepare emergency budgets to implement priority interventions, to reprogram funds allocated for other development projects, and/or to mobilize additional resources. As the case studies of Djibouti and Tunisia show, RNAs and rapid PDNAs can also be used to raise the awareness of governments on the need to improve their countries' disaster risk management (DRM) systems.

In Djibouti, the 2018 RNA was conducted with the assistance of the Food and Agriculture Organization. Within one week of receiving the official request, the assessment was completed, and the findings presented to the Ministry of Finance. The assessment estimated that the damages and losses due to Cyclone Sagar amounted to US$ 29 million, and that US$ 31 million was needed for recovery and reconstruction. Within the first year of the disaster, Djibouti's recovery focus has been placed on restoring vulnerable damaged physical infrastructure in the critical sectors and providing immediate support to farmers and the livelihood of those most affected. Within the next three years, the focus will shift to investing in enhancing disaster risk reduction measures such as improving hydrometeorological early warning systems to alert the community and put in place measures to reduce losses.

Supported by the Global Facility for Disaster Reduction and Recovery(GFDRR), the RNA in Djibouti has also informed a modified institutional framework for national disaster response, which outlines how the government will prepare for, respond to, and recover from disasters, and disaster communication guidelines. As a direct result of the RNA's findings, the Government of Djibouti is also being supported by the World Bank in exploring viable options for disaster risk financing. Building up on the 2018 RNA, a World Bank-supported rapid Post-Disaster Needs Assessment (PDNA) was carried out jointly with the United Nations after the November 2019 flash flooding. Led by the Ministry of Interior and covering eight sectors, the rapid PDNA found that the housing, transport and health sectors were the most severely affected. The preliminary findings were presented to the Executive Secretary for Disaster Risk Management (DRM) within five days. With additional data collection being undertaken, the final report is currently being completed.

In Tunisia, the RNA was led by the Government with support from the World Bank, the United Nations, and the European Union. A first preliminary report was presented one week following the disaster event to the Ministry of Development, Investment and International Cooperation. This report was then used by the Government for mobilizing funding during the 2018 World Bank Annual Meetings. Following additional data collection on the ground, a final report was presented one month after the flooding. The final report estimated the recovery and reconstruction needs at US$ 99 million, most of them concentrated in the transport and housing sectors that were significantly impacted by the flooding. The RNA identified areas which could be strengthened in the country's DRM system, including disaster risk understanding, an institutional framework with cross-sectoral coordination, a functioning early warning system, and systematic ex-ante disaster risk financing mechanisms.

Prompted by the analysis provided in the RNA, the Government of Tunisia subsequently requested the World Bank to provide technical and financial support on DRM. Based on detailed consultations with key counterparts, the World Bank is currently providing a comprehensive technical assistance program, which covers the following main elements: i) the development of a national hazard risk profile covering floods and earthquakes, ii) technical inputs to the national flood risk management program; iii) recommendations for the institutional strengthening of Tunisia's DRM framework; iv) technical support to improve the country's hydrometeorological services and early warning systems, and v) the development of a national disaster risk financing strategy.

As the two case studies in Djibouti and Tunisia demonstrate, RNAs can be a very useful tool for governments to quickly understand the impact of small-scale disasters and to initiate appropriate disaster recovery efforts. As they also shed light on the underlying challenges in countries' DRM systems, they also serve as effective instruments to identify areas of collaboration between the governments and the international community, including the World Bank, on strengthening DRM. With the effects of climate change likely to aggravate the frequency and severity of natural disasters in the Middle East and North Africa, demand for this kind of assessments is likely to increase in the near future.

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The Global Facility for Disaster Reduction and Recovery (GFDRR) is a global partnership that helps developing countries better understand and reduce their vulnerabilities to natural hazards and adapt to climate change. Working with over 400 local, national, regional, and international partners, GFDRR provides grant financing, technical assistance, training and knowledge sharing activities to mainstream disaster and climate risk management in national and regional policies, strategies, and investment plans. Managed by the World Bank, GFDRR is supported and directed by a Consultative Group that has 17 members and 14 observers.