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Japan–World Bank Program
for Mainstreaming Disaster Risk
Management in Developing Countries
2016–17 Annual Report

This Annual Report covers the period between April 2016 and March 2017 (2016-17). It was presented at the Fourth Program Steering Committee Meeting, held in Tokyo, Japan on March 6, 2017.

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1. executive summary

This **2016-17 Annual Report** highlights (i) activities conducted and (ii) results achieved by the Japan-World Bank Program for Mainstreaming Disaster Risk Management during April 2016 to March 2017¹, through the Country and Knowledge programs of the World Bank DRM Hub, Tokyo (Hub). The separate **2016-17 Program Profiles Report** provides full project-level reporting of activities for the 2016-17 period.

Key highlights of the 2016-17 reporting period include:

- The Program launched 11 new country projects and 6 new knowledge projects
- The active multi-sector country portfolio of 33 technical assistance (TA) projects now totals US\$46 million and is benefitting 5.7 million people in 47 countries to build disaster and climate resilience.
- The Program's TA projects have been instrumental in leveraging World Bank investments totaling US\$1.55 billion.
- Through the Knowledge Program, the DRM Hub continues to capture and deploy Japanese expertise for developing country officials and World Bank teams, producing 17 knowledge products to inform disaster resilient investment.
- The Hub has convened nearly 1,350 people through nearly 50 knowledge exchanges, including technical workshops, public seminars, and other events, as well as 2 Technical Deep Dives (TDDs) with the Tokyo Development Learning Center (TDLC). Since its start, the Program has brought together more than 3,000 people and conducted nearly 100 knowledge exchanges.
- More than 280 Japanese expert contributors from the public and private sectors have participated in Hub events or been deployed to developing countries this year, reaching a total of 550 since the start of the Program.

The Hub has continued to capitalize on its location in Tokyo to develop cooperative efforts between World Bank operations and Japanese partners (see Box 1). The DRM Hub's 15 projects under the Knowledge Program are advancing the focus areas of "Resilient Infrastructure", "Urban Resilience", "Science and Technology for Resilience", and "Disaster Risk Governance and Inclusion". Across these focus areas, the Hub has established strategic partnerships with key government agencies including Cabinet Office, Ministry of Land, Infrastructure, Transport, and Tourism, Japan (MLIT), Japan International Cooperation Agency (JICA), and a number of technical specialized agencies such as the International Sabo Association, Japan Landslide Society, and railway and metro operators.

¹ This report covers the period from April 2016 and March 2017, denoted as "2016-17" throughout this report.

After three years of operations, the Hub’s engagement strategy has evolved in line with a number of important lessons learned to date. For example, it is critical to develop knowledge products and programs in synergy with the specific needs of TA grant recipients. These counterparts are a key audience for Japanese knowledge, given the existing entry point due to their role in implementing Country Programs.

The Program continues to make achievements toward its objective of supporting developing countries in mainstreaming DRM in national development planning and investment programs and connecting Japanese and global expertise to these investments (see Figure 1). The Program continues to work best with (i) a Knowledge Program delivering knowledge products and exchanges to make DRM best practices and solutions accessible for developing countries, and (ii) a Country Program delivering needed support for technical assistance (TA) projects in developing countries. With these in place, the World Bank is able to prepare and implement DRM investment projects that help developing countries reduce their disaster risk and enhance their disaster resilience.

Figure 1: Japan-World Bank Program for Mainstreaming DRM in Developing Countries through World Bank Investment Projects

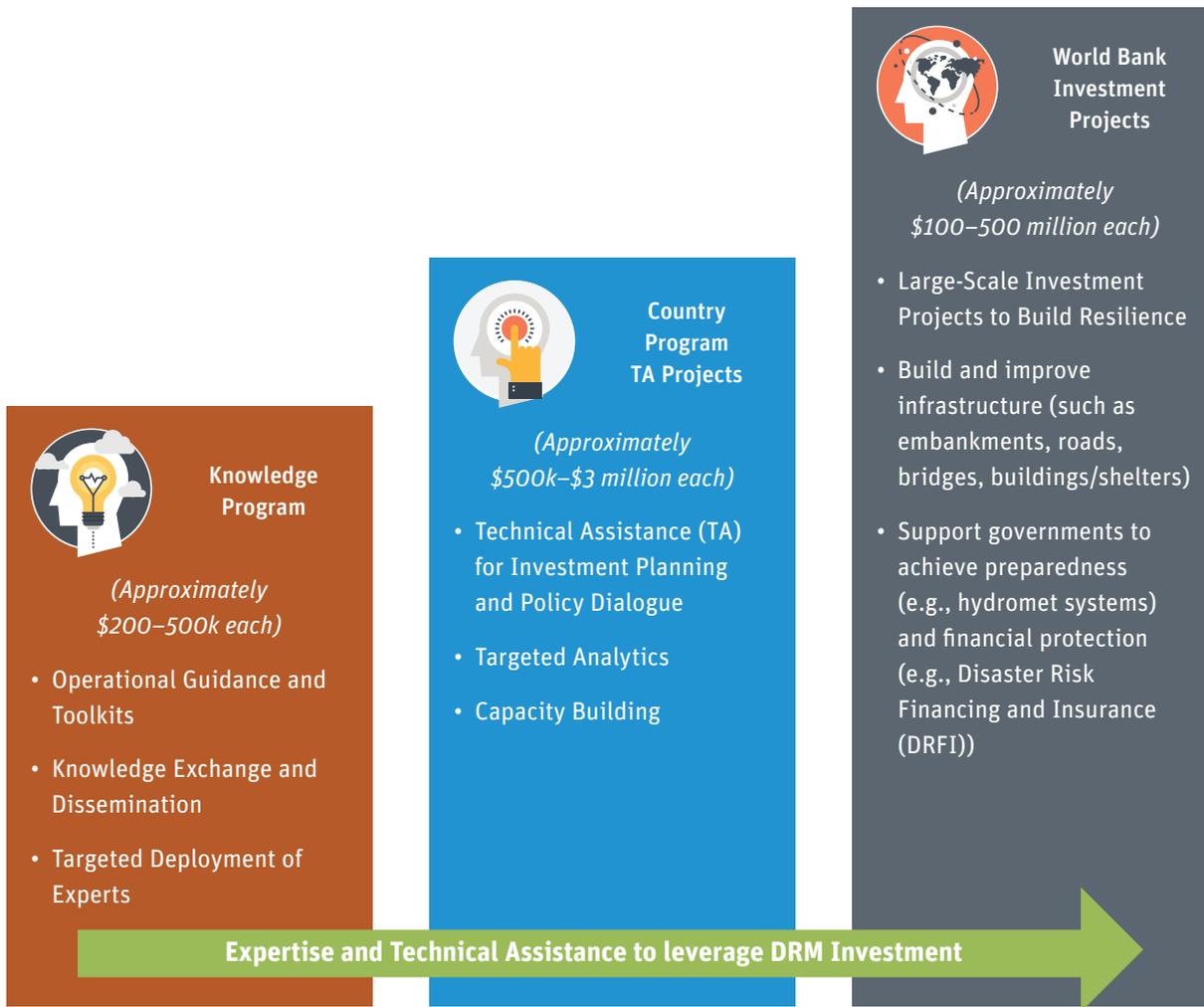


Table 1: Key Figures on the Program to Date

	2014-15	2015-16	2016-17 ²
MOF Contribution to the Program	\$20 million	\$30 million	\$30 million
Total Commitments (at end of the 12-month period)	\$15 million 16 projects (11 country and 5 knowledge 12 countries)	\$45 million 31 projects (22 country and 9 knowledge) 32 countries	\$64 million 48 projects (33 country and 15 knowledge) 47 countries
Outputs	2	3	Of the 12 output indicators: <ul style="list-style-type: none"> ■ 4 have already met or exceeded the target; ■ 4 are approaching target; ■ 4 are in progress.
Outcomes	3	3	<ul style="list-style-type: none"> ■ Knowledge deepened (71% achieved) ■ Client capacity increased (70% achieved) ■ Innovative approaches & solutions (43% achieved) ■ Development financing informed (64% achieved) ■ Policy/strategy informed (55% achieved)
World Bank Leveraging and Beneficiaries	3	\$0.7 billion leveraged in World Bank investments	\$1.55 billion leveraged in World Bank investments
	3	3.5 million beneficiaries	5.7 million beneficiaries

² As of February 2017.

³ In the first year of Program operation, activities did not complete outputs and outcomes, therefore indicators were not reported. Other figures are estimated as of that date.

Box 1: The Japan-World Bank Program: A Mission in Action

In October 2012, building on the recommendations of the Sendai Report, Japan's Minister of Finance and World Bank Group President Dr. Jim Yong Kim issued the Sendai Statement, emphasizing, "the importance of vulnerable developing countries for building resilience to disasters, including the usage of Japanese know-how and expertise, and extending knowledge and partnerships to support disaster risk management (DRM) policies and programs."

In response to this call to action, the World Bank and the Government of Japan launched the Japan-World Bank Program for Mainstreaming DRM in Developing Countries (the Program) and the related World Bank DRM Hub, Tokyo in February 2014, with the critical goal of helping vulnerable countries incorporate DRM into their national development strategies and development programs.

Japan's Ministry of Finance (MoF) gave a US\$100 million contribution to support the Program, disbursed in annual installments over five years, of which \$80 million has been received to date.

The Program is managed by the Global Facility for Disaster Reduction and Recovery (GFDRR) under the oversight of a Steering Committee comprising representatives from the MoF, JICA, and the World Bank. Day-to-day operations are conducted by the Hub under the guidance of the World Bank's Special Representative, Japan.

2. context for hub activities in 2016-17

Demand from vulnerable countries to tackle disaster and climate risk continued to drive the Hub's country-level support in 2016-17. In addition, with a number of the first phase of outputs now delivered, the Knowledge Program has moved to a more operationally engaged phase, initiating a number of global, regional and country level partnerships to apply various aspects of Japanese knowledge and expertise captured through its reports and tools.

A number of key focus areas continued to set the policy context for operations during the year, as described below.

International Policy Frameworks: Countries moved to begin implementing the various global commitments to disaster and climate resilience signed during 2015. During 2016-17, the Hub provided TA supporting multiple Sustainable Development Goals (SDGs). For example, the Hub is supporting “Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation” (SDG #9) through the project South Asia: Promotion of Resilient Infrastructure, and “Make cities and human settlements inclusive, safe, resilient and sustainable” (SDG #11) through the project Streamlining DRM in Municipal Investment and Urban Planning in Central America. The Hub's technical assistance supports all of the Sendai Framework's four Priorities for Action, as summarized in Annex 1.

Climate Risks: In line with the World Bank's Climate Change Action Plan (CCAP), which responds to the global climate agreement now ratified by 140 countries, the Hub has a portfolio of US\$35.0 million in TA to help vulnerable countries manage weather and climate change-related challenges. The Hub supports countries creating an enabling environment for early warning systems through integrated data management and other investments, and is applying lessons learned from Japan's experience to build a solid business case for service-oriented hydromet services.

Quality Infrastructure: Countries that ensure the quality of their infrastructure through design, operations and maintenance, and appropriate contingency planning demonstrate greater resilience to disaster shocks. The Hub is playing a key role in a fast evolving agenda for the World Bank and its clients, through both country TA and a number of knowledge programs. On the TA side, the Program has developed a portfolio of US\$22.2 million in grants supporting different dimensions of quality infrastructure. During the year, the Hub launched a number of knowledge engagements supporting innovative planning and collaboration in the field of resilient infrastructure.

Urban Resilience: Urbanization is the defining phenomenon of the 21st century. For the first time in history, more than half the world's population lives in cities, with 90 percent of urban growth taking place in the developing world. The World Bank has proven expertise on diagnostic work and investment programs in urban resilience, which is likely to be a rapidly growing business area. To keep up with this demand, the Hub has a growing TA portfolio of US\$22.2 million to help countries strengthen urban resilience. The Hub's

Building Regulation for Resilience project delivered a new report to share Japan's evolution and experience in regulation covering administration, capacity development, and incentive mechanisms to make living and working environments safer and more resilient. A number of country engagements – in the Philippines and India, for example - are applying this new knowledge base in projects.

Fragility and conflict-affected states: During 2016-17, political instability and a growing number of refugees and migrants continued to exacerbate the vulnerability of millions of displaced and otherwise affected people. The Hub contributes to reducing risks in fragile and conflict affected environments. The Hub has an active portfolio of TA grants, totaling US\$13.0 million, to build disaster resilience in fragile and conflict affected states. This also includes those affected by cross-border movement of refugees. In Turkey, for example, the TA program has supported the Education Infrastructure for Resilience Project, which aims to support Turkey to improve access to education for Syrian refugees by expanding disaster resilient education infrastructure in affected provinces.

3. overview of 2016-17 activities and results

The Hub works through two inter-dependent work streams: (i) the Country Program and (ii) the Knowledge Program. Through the Country Program, the Hub provides grants to assist in the preparation and implementation of operations with a strong focus on mainstreaming DRM in development plans and programs (see Box 2). Through the Knowledge Program, the Hub implements activities to capture and apply Japanese knowledge, expertise, and technology to development challenges World Bank client countries.

Box 2: Focus on the Progress of DRM Mainstreaming in the World Bank and the Role of the Hub

Engagements in IDA countries built on the IDA17 requirement for disaster and climate screening and helped countries, such as Afghanistan, India, Myanmar, and Nepal, engage World Bank projects to (i) create and improve their national and subnational disaster management agencies, (ii) plan and invest in their hydro-meteorological services and early warning systems, and (iii) create basic plans to reduce and manage disaster risk in construction and reconstruction through quality infrastructure, among other investments. IDA18 will bolster this progress, opening new financing options to developing country clients.

IBRD countries supported by the Hub, such as the Philippines and Peru, focused on (i) more sophisticated investment strategies and design enhancements to reduce and manage physical risks through quality infrastructure (such as in Peru's targeted school investment program, which has already safeguarded over 300 schools), (ii) options to increase the technological and operational service delivery of agencies responsible for implementation of DRM, and (iii) creating and implementing financial protection strategies, among other investments.

For these efforts, the *WBG/IMF Development Committee Report on Mainstreaming DRM (2016)* cites the role that Japan-World Bank Program is playing as key drivers of mainstreaming of DRM in WBG operations, "stepping up the transfer of relevant knowledge to developing countries" and strengthening DRM capacity globally.

In line with GFDRR's resource prioritization, three criteria continue to provide a guide to allocation across all activities:

1. Address the Drivers of Disaster Risk: The Hub designs and supports activities that take on the key development challenges, such as inadequately designed and constructed infrastructure, that threaten to increase disaster risk;
2. Enable Partners: The Hub develops and deepens collaboration that enhances the transfer of knowledge from Japanese centers of excellence to players on the ground and promotes operational and strategic coordination among partners; and

3. Catalyze Large-Scale Investment: The Hub seeks to influence, inform, and leverage large-scale resilience investments supported by development partners, particularly the World Bank, as well as the public and private sectors.

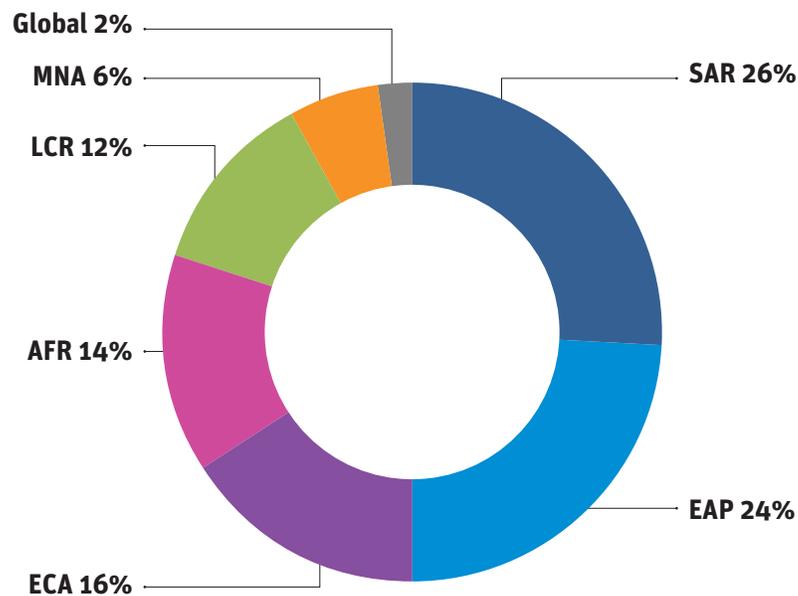
The following sections summarize the activities conducted during the year, outputs delivered, analysis of results achieved, and partnerships with Japan established.

3.1 Country Program

During 2016-17, the Hub has approved eleven new projects (as of February 13, 2017), which expands the Program's geographic reach to 47 countries. A profile of all active projects is included in the **2016-17 Program Profiles Report**.

The total active Country Program project portfolio is US\$46 million. Figure 2 shows the distribution of financial allocations by region, reflecting the continued global reach of the program, with over half of resources allocated to EAP and SAR.

Figure 2: Cumulative Funding Distribution by Region



The Hub has engaged a wide range of government and other technical in country programs. Table 2 provides an overview of Japanese engagement at the project level.

Table 2: Country Program Overview: Mainstreaming Status and Japanese Partnerships

Country/Grant Name	Tackling Climate Risks	Quality Infrastructure	Urban Resilience	Resilience in Fragile and Post-Conflict States	Japanese Partners/Engagement
EAP					
Philippines - Enabling Scaled up Risk Reduction Investments in the Philippines	X	X			<ul style="list-style-type: none"> ■ Dispatching Japanese experts on building regulations and engineering ■ Leveraging results of joint research on disaster resilient housing between academia from University of the Philippines and Kyoto University
Pacific - Pacific Catastrophe Risk Insurance Pilot Season 3	X			X	<ul style="list-style-type: none"> ■ Reinsurance is provided by Sampo Japan Nipponkoa Insurance, Mitsui Sumitomo Insurance, Tokio Marine & Nichido Fire Insurance ■ “Pacific Catastrophe Risk Insurance Pilot - From Design to Implementation”, a comprehensive report to summarize lessons learnt from the pilot program, was jointly prepared by JICA, WB, and GFDRR
Myanmar, Cambodia, Lao PDR - Developing Strategic Plans for Disaster Risk Financing, Risk Reduction and Hydromet Services in South East Asia	X			X	<ul style="list-style-type: none"> ■ JICA and WB jointly leading donor coordination in the area of Hydromet and Early Warning ■ Participation in Technical Deep Dive (TDD) in Japan ■ Review of Yangon drainage studies developed by JICA shaped the focus of a proposed IDA investment. ■ The Task team engaged 2 Japanese experts from Miyamoto International to develop rapid visual assessment and prioritization of vulnerable critical public buildings in Yangon by conducting structural survey and seismic analysis of prioritized buildings. Based on their work, conceptual seismic retrofit schemes and cost estimates for 12 buildings was developed to help shape the focus of investments under the proposed IDA investment.
Pacific - Pacific Resilience Program co-financing	X			X	<ul style="list-style-type: none"> ■ Collaboration and coordination with JICA on Hydromet and Early Warning in the Pacific
Pacific - Sustainable Energy Industry Development Project co- Financing	X			X	<ul style="list-style-type: none"> ■ Knowledge exchange on Business Continuity Planning of the power utilities between power utilities in PICs and Japan

continues

Country/Grant Name	Tackling Climate Risks	Quality Infrastructure	Urban Resilience	Resilience in Fragile and Post-Conflict States	Japanese Partners/Engagement
Vietnam - Supporting Resilience of Critical Infrastructure Investments	X	X	X		<ul style="list-style-type: none"> ■ Collaboration and coordination with JICA and various ministries of Japan on Resilient Infrastructure, PPP, and Landslide Risk Reduction
Cambodia - Strengthening Financial Planning and Rural Infrastructure for Disaster Resilience in Cambodia	X	X	X		<ul style="list-style-type: none"> ■ Collaboration with the MOF and JICA in the area of disaster risk financing and insurance and preparation for ASEAN+3 Finance Minister's Meeting in Yokohama in May 2017. Japanese insurance industry also showed their interests in engaging in this initiative.
SAR					
Bangladesh - Bangladesh - An Integrated Approach to Enhance Urban Resilience in Dhaka	X	X	X		<ul style="list-style-type: none"> ■ Collaboration and coordination with JICA and various ministries of Japan on Urban Resilience and Seismic Retrofitting works
Afghanistan - Strengthening Early Warning Systems and DRM Capacity in Afghanistan	X			X	<ul style="list-style-type: none"> ■ JICA and WB jointly leading donor coordination in the area of Hydromet and Early Warning ■ Participation in Technical Deep Dive (TDD) in Japan ■ JICA is periodically sending national hydrologists for training and capacity building in both Japan and India, in collaboration with CTI Engineering
Bhutan - Bhutan Weather and Disaster Improvement Regional Project	X				<ul style="list-style-type: none"> ■ Collaboration with JICA's ongoing support in the area of Hydromet and early warning knowledge exchange with Japan through Hub's Hydromet KP
Pakistan - Technical review and capacity building program on Climate induced risks in Pakistan	X		X	X	<ul style="list-style-type: none"> ■ Participating the planned Technical Deep Dive(TDD), organized by DRM Hub in April 2017 to identify appropriate Japanese technical partners such as ICHARM and DIAS project led by University of Tokyo
Nepal, Bangladesh, Afghanistan, Bhutan - South Asia - promotion of resilient infrastructure	X	X			<ul style="list-style-type: none"> ■ Deputy Minister of Ministry of Energy and Water (MEW), Afghanistan and other key officials visited Japan to learn integrated water management and effective institutional arrangement ■ Knowledge Exchange on Business Continuity Planning in Waterworks between Tokyo Waterworks and Chittagong Water Supply and Sewerage Agency (WASA) ■ Two Bhutanese engineers from Department of Roads participated JICA training on public works administration and road assets management in Japan

continues

Country/Grant Name	Tackling Climate Risks	Quality Infrastructure	Urban Resilience	Resilience in Fragile and Post-Conflict States	Japanese Partners/Engagement
India - Improving service delivery of DRM in India	X	X			<ul style="list-style-type: none"> ■ Experts exchange between Japan Water Agency (JWA) and India's Central Water Commission in Japan ■ JWA's consultancy service to develop a post-earthquake dam safety check manual ■ Organized the "International Symposium on Tackling the Challenges of Slope Stabilization and Landslide Prevention," from April 27-29, 2015, co-sponsored by the Hub and JICA. 36 experts from Bhutan, Colombia, India, Japan, and Switzerland participated. ■ The task team engaged 5 Japanese experts from JWA to review the operations and maintenance methods, procedures and status of dams under Dam Rehabilitation and Improvement Project (DRIP) in consultation with Central Water Commission (CWC) of India and Uttarakhand Jal Viduyut Nigam (UJVLN; Uttarakhand electricity corp.) ■ Deployed Japanese experts delivered a final report including "Checklist and Manual for Quick inspection soon after an earthquake event" and "Checklists and Manuals for the First inspection within 24 hours after an earthquake event" in order to improve operation and maintenance methods with specific focus on safety of the dam after a seismic event.
Nepal - Disaster-Linked Social Assistance Delivery Support System Development in Nepal					<ul style="list-style-type: none"> ■ The WB and Tohoku University co-hosted a public seminar "Resilient Reconstruction in Nepal Transforming Risks to Resilience" on April 26, 2016 ■ JICA was the primary Japanese counterpart providing approximately \$100 million of which 80-90% were to be allocated for housing grants
Sri Lanka - Support Risk Sensitive Infrastructure Planning in Colombo Megapolis Region and Scaling of Spatial Data Platform	X	X			<ul style="list-style-type: none"> ■ This proposed project intends to build on initiatives of the government in partnership with ICHARM and JAXA in the areas of flood risk modeling and use of remote sensing data in disaster risk assessments, respectively.

continues

Country/Grant Name	Tackling Climate Risks	Quality Infrastructure	Urban Resilience	Resilience in Fragile and Post-Conflict States	Japanese Partners/Engagement
ECA					
Armenia - Armenia National Disaster Risk Management Program	X	X			<ul style="list-style-type: none"> ■ An expert from Asian Disaster Reduction Center (ADRC) in Kobe was hired to develop a case study of Japan's disaster simulation drills ■ Experts Visit on crisis management, disaster preparedness and response and urban resilience was conducted in September 2016, together with clients from Tajikistan and Kyrgyz Republic ■ Armenia has drafted a law to convene a nation-wide disaster simulation drill and to designate a national day on disaster preparedness ■ In the process of identifying appropriate Japanese experts, one expert from the National Research Institute for Earth Science and Disaster Resilience (secondment from MLIT) helped the DRM Hub connect not only DRM experts but also appropriate level of people at the Cabinet Office who leads disaster drill exercise at national level to the task team.
Uzbekistan - Strengthening Disaster Resilience in Uzbekistan		X			<ul style="list-style-type: none"> ■ Japan's experience informed TA development through Japan's case presented at the "Central Asia Earthquake Risk Reduction Forum" held on October 27-28, 2015, supported of the DRM Hub, Tokyo. ■ Hub's Knowledge Program on (a) Seismic Risk Identification and Decision-making; (b) Safer Schools; and (c) Building Regulations will share Japan's prioritization approach for resilient investment and policy making.
Tajikistan - Strengthening Disaster Resilience in Tajikistan	X	X	X		<ul style="list-style-type: none"> ■ Experts Exchange on simulation drill and DRM policy was conducted in Sept, 2016, together with clients and specialists and high level officials of the Japanese Government, Municipalities of Tokyo, Kobe and Saitama cities, as well as regular citizens and activists. Participants have even participated at the National Simulation Drills on September 1, 2016, which was led personally by the Prime Minister of Japan.

continues

Country/Grant Name	Tackling Climate Risks	Quality Infrastructure	Urban Resilience	Resilience in Fragile and Post-Conflict States	Japanese Partners/Engagement
Kyrgyz Republic - Strengthening Disaster Risk Management in the Kyrgyz Republic			X		<ul style="list-style-type: none"> ■ Collaboration and coordination with JICA and various ministries of Japan on applicability of a Japanese case study on best practices in Information, Communication, and Technology (ICT) solutions for early warning systems and emergency operation centers
Turkey - Building Resilience in Turkey	X	X	X		<ul style="list-style-type: none"> ■ Knowledge exchange with Japan on school building safety planned through Hub's Knowledge Program on Safer Schools ■ Country-level close collaboration with JICA in the area of DRM
LAC					
Peru - Mainstreaming DRM in Peru's Education Sector		X			<ul style="list-style-type: none"> ■ TA benefitted from the expertise and knowledge fostered at CENAPRED (seismic research center) in Peru with assistance of JICA ■ TA to be informed by a Japan's nationwide school retrofitting program captured through Hub's Knowledge Program on Safer Schools ■ TA undertook partnership with the Japan-Peru Center for Earthquake Engineering Research and Disaster Mitigation (CISMID) from the National Engineering University
Brazil - Innovation in Disaster Risk Management Decision Making in Brazil	X	X	X		<ul style="list-style-type: none"> ■ Knowledge exchange planned with Japan on flood risk management through Hub's Knowledge Program on Urban Floods ■ Country –level close coordination with JICA
Honduras, Nicaragua - Strengthening Climate Information and Early Warning Systems to Support Climate-Resilient Development in Honduras and Nicaragua	X				<ul style="list-style-type: none"> ■ Opportunities for collaboration between the government of Nicaragua and ICHARM (International Center for Water Hazard) are currently being explored. ■ Country –level close coordination with JICA
El Salvador - Mainstream Disaster Risk Management in El Salvador Education Sector		X			<ul style="list-style-type: none"> ■ TA to be informed by a Japan's nationwide school retrofitting program captured through ■ Hub's Knowledge Program on Safer Schools Country –level close coordination with JICA
Honduras, Nicaragua, El Salvador - Strengthen DRM+Resilience of Central American cities	X		X		<ul style="list-style-type: none"> ■ Country –level close coordination with JICA

continues

Country/Grant Name	Tackling Climate Risks	Quality Infrastructure	Urban Resilience	Resilience in Fragile and Post-Conflict States	Japanese Partners/Engagement
MNA					
Egypt - Strengthening DRM in Egypt Project - GFDRR	X		X		<ul style="list-style-type: none"> ■ Dispatching Japanese experts is envisaged ■ Study tour to Japan is planned to enhance knowledge exchange
Tunisia - Streamlining DRM in Municipal Investment and Urban Planning	X	X	X		<ul style="list-style-type: none"> ■ Country –level close coordination with JICA
MNA - Global Resilience Investment Fund (GRIF)/ Women for Resilience (W4R)		X	X	X	<ul style="list-style-type: none"> ■ W4R - Collaboration with JICA's female entrepreneur training program being discussed ■ GRIF - Collaboration with Global Infrastructure Facility (GIF) on feasibility survey in Japan and Japanese investor cultivation
AFR					
Regional - Africa Hydromet Technical Assistance - Capacity Building and Knowledge Exchange Program	X				<ul style="list-style-type: none"> ■ Participation in the Technical Deep Dive(TDD) on Hydromet organized by the DRM Hub Tokyo in Sept 2016 ■ Strategic collaboration with Japan Met Agency and Japan Hydrological Agencies for capacity building and knowledge transfer to sister agencies in Africa. ■ Knowledge exchange with Japanese centers of excellence including academic and technical institutions, government agencies, city governments and private sector
DR Congo - Improving DR Congo's capacity to manage, monitor and respond to natural hazards in the region of Goma			X	X	<ul style="list-style-type: none"> ■ Knowledge exchange planned with professors from Hokkaido University and Tohoku University who has researched volcanoes in DRC over 30 years
Ghana - Strengthening Flood Management in White Volta Basin	X				<ul style="list-style-type: none"> ■ Training opportunity on a new methodology for discharge measurement by Kobe University and Kyoto University provided to a project counterpart through a research project "Enhancing Resilience to Climate and Ecosystem Changes in Semi-Arid Africa An Integrated Approach (CECAR-Africa)", funded by JICA and Japan Science and Technology Agency (JST).
Global					
Paraguay, Lao PDR, Kenya, Sri Lanka, Serbia - Resilient Transport Infrastructure Program	X	X	X		<ul style="list-style-type: none"> ■ Knowledge exchange using the "Road Geohazard Management Handbook", being developed by DRM Hub Tokyo based on the relevant Japanese experience

3.2 Knowledge Program

Under the Knowledge Program, the DRM Hub connects developing countries with the knowledge, expertise, and technology solutions needed to build resilience to disaster and climate risk. To achieve this, the DRM Hub (i) develops knowledge products to meet developing country demand for expertise, best practices, and solutions in DRM, and (ii) conducts knowledge exchanges, including Technical Deep Dives (TDDs), to build the capacity and awareness of client officials and World Bank teams to prepare and implement high-quality DRM investments.

The Hub's approach ensures the high-potential demand from developing countries for mainstreaming meets the high-quality supply of Japanese and global expertise. The products and knowledge exchanges are targeted at helping developing country officials, World Bank Task Teams, and other development professionals understand options available and best apply them.

The Hub's Knowledge Program is designed around four focus areas:

1. **Resilient Infrastructure:** Support developing countries to plan, design, construct, finance, operate, and maintain disaster risk-informed infrastructure
2. **Urban Resilience:** Support urban areas to prepare for, adapt to, withstand, and recover rapidly from natural disasters that uniquely affect urbanizing and urbanized areas.
3. **Science and Technology for Resilience:** Support developing countries to assess disaster risks quickly and accurately and access the information and tools needed to make critical risk-informed investments
4. **Disaster Risk Governance and Inclusion:** Support developing countries to improve the effectiveness of their DRM frameworks, financing mechanisms and integrate vulnerable groups

Table 3 provides an overview of Knowledge Projects under implementation, indicating key technical areas of focus, key outputs being delivered at the request of World Bank clients and development professionals, and the partners helping deliver products that meet the technical standards and specifications needed.

Table 3: Knowledge Program Overview: Mainstreaming Status and Japanese Partnerships

Knowledge Project	Objective	Expected Outputs	Audience	Japanese Partners
Focus Areas: Resilient Infrastructure				
Integrating Japan's Experience into the Global Program for Safer Schools	Connect Japan's experience and technical knowledge with the World Bank's Global Program for Safer Schools to make school facilities, and the communities they serve, more resilient to natural hazards	Operational Guidance Roadmap, Risk Identification Platform	Civil society, Others (Development partners)	MEXT, MLIT, JICA
Road Geohazard Risk Management	Build a knowledge base on landslides and practical interventions in developing countries by taking stock of the hazards faced and solutions applied in Japan	Toolkit, Case Studies, Operational Manual, Workshops	National and Sub-national government, DRM or Civil Protection Agency, and Academia	MLIT, JICA, International Sabo Association, Sabo and Landslide Technical Center, Hiroasaki University, Japan Landslide Society
Resilient Rails Development and Operations	Address a knowledge gap by synthesizing good-practice in resilience in all phases of rail project development, providing just-in-time support on immediate and critical issues for metro projects in India, Peru, and/or Ecuador	Guidance notes, Case studies, Workshop, Just-in-time operational support	National government, sub-national government, DRM agency, rail operators	MLIT, Japan Railway and metro operators, Academia
Resilient Water Supply and Sanitation Services	Develop a knowledge product on emergency preparedness and business continuity planning (BCP) of water and sanitation services by leveraging Japanese and global expertise, knowledge, and experience on resilient design, operation, and maintenance (O&M) of water and wastewater infrastructure and assets	Knowledge Notes, Knowledge Exchange	National government, sub-national government, DRM agency, water utilities	MLIT, MHLW, Japan Water Works Association, Japan Sewage Works Association, Municipalities

continues

Knowledge Project	Objective	Expected Outputs	Audience	Japanese Partners
Dam Safety and Disaster Resilience	Focusing on dam safety and resilience to geophysical hazards, facilitate knowledge exchange among 12 countries from the EAP Region and compile three individual country case studies as part of the global assessment (Japan, Lao, and Myanmar)	Case Studies, Knowledge Exchange	National government, sub-national government, DRM agency	MLIT, MAFF, JWA, JCOLD,
Resilient Infrastructure PPPs – Contracts and Procurements (implemented with GIF)	To develop a knowledge project that assists policy makers, project developers, and financiers with resilient infrastructure PPP project preparation.	Technical Guides	National government, sub-national government, PPP practitioners	MLIT, Kyoto University
Infrastructure Prioritization Framework and Resilience (implemented with PPP CCSA)	Provide a tool designed to inform upstream infrastructure project selection that considers, amongst other factors, resilience to hydrological, meteorological, and geophysical hazards in developing countries	Knowledge notes and Knowledge exchange	National government, sub-national government municipalities	Cabinet Office, MLIT, Japanese PPP practitioners (e.g., commercial banks, lawyers, private investors, business consulting firms, Toyo University
Focus Areas: Urban Resilience				
Integrated Urban Flood Risk Management	Engage relevant Japanese expertise and capture how Japan has adapted and currently applies river basin management approaches to reduce flood risk.	Knowledge Notes, Knowledge Exchange	National and Sub-national government, DRM or Civil Protection Agency, Civil Society, and Academia	MLIT, JICA, ICHARM
Building Regulation for Resilience	Capture relevant Japanese expertise, particularly how the country improved building regulation compliance rates during its high economic growth period in the 1960-80s when its building supply increased sharply	Knowledge Notes, Online Platform for Knowledge Exchange, Capacity Building Program	National and Sub-national government, DRM or Civil Protection Agency, Civil Society, and Academia	MLIT, JICA, Architectural Institute of Japan, GRIPS
Focus Area: Science and Technology for Resilience				
Modernized Hydro-Meteorological Services	Draw on lessons learned from Japan's experience in building modern services in this area, and connect developing countries with this applied knowledge	Knowledge Notes, Operational Guidance	National government, Sub-national government, and DRM agencies	JMA, MLIT, JICA, Cabinet Office

continues

Knowledge Project	Objective	Expected Outputs	Audience	Japanese Partners
Seismic Risk Identification and Decision Making	Develop guidance materials for developing countries on key technical methodologies for assessing earthquake risk, based on learning from Japan	Operational Guidance	National government, Sub-national government, and DRM agencies	MLIT
Smart DRM: Information and Communication Technology (ICT) readiness and application	Leverage Japanese and global best practices to pilot a toolkit for practitioners to identify, prepare, appraise, and implement solutions for specific disaster types and DRM needs, based on empirical case studies of ICT use for DRM in Japan	Toolkits, Knowledge Management and Notes	National governments, sub-national governments, and DRM agencies	MIC, JBP
Focus Area: Disaster Risk Governance and Inclusion				
Social Risk Management and Disaster Risk Management	Build and strengthen connections between social protection systems and DRM demands in vulnerable countries to reduce social risks from disasters	Toolkits, Training and Knowledge Exchange	National governments, sub-national governments, DRM agencies, civil society, and academia	Cabinet Office, MHLW, Japan National Council of Social Welfare
Empowering Elderly, Women, and People with Disabilities for Resilience	Strengthen community-driven preparedness and longer-term resilience in developing countries where elders, women, and PWD play a leading role by leveraging Japanese expertise and experience in this area	Operational Toolkit, Impact Evaluation	Sub-national government, Civil Society, Academia, and Other: Disaster-affected communities	Tokyo University, NGO
Resilient Cultural Heritage and Tourism	Capture Japanese expertise in DRM-based cultural heritage to inform World Bank projects and improve their integration of best practices in strengthening and safeguarding cultural heritage sites	Knowledge Notes, Knowledge Exchange	National and Sub-national government, DRM or civil protection agency, cultural heritage authorities and organizations, civil society, and academia	Institute of Disaster Mitigation for Urban Cultural Heritage at Ritsumeikan University (R-DMUCH), National Institute for Cultural Heritage (CH-DRM Network), Kyoto City

Technical experts from the private sector (Box 3) in Japan provide guidance and operational assistance to supply solutions and best case studies.

Box 3: Engaging Japan’s Private Sector to Strengthen Resilience

The private sector plays an integral role in helping developing countries build resilience through providing technologies and innovative services. An analysis of the FY12-15 DRM co-benefits shows that a total contract volume of US\$3.7 billion was awarded⁴ to procure civil works (70%), consultant services (20%), goods (10%), and non-consultant services (3%). Approximately 30% (US\$1.9 billion) of the contract volume was awarded in Water, Sanitation, & Flood Protection, 25% (US\$1.5b) in Energy & Mining, and 20% (US\$1.3b) in Transportation, owing to the large volume of civil contracts awarded in these sectors.

As shown in figure below, Japanese private sector shared expertise with a total contract volume of US\$145m including the following:

- Nippon Koei and local engineering firms provided project management and engineering services (US\$53m) for Dasu Hydropower Project (P121507);
- Nippon Koei provided feasibility and engineering services (US\$80m) for Tarbela 4th Extension Hydropower Project in Pakistan (P115893); and
- Marushin Shitaka Construction provided maintenance and rehabilitation works (US\$11m) for a feeder canal in Nepal (P118179).



To facilitate effective partnerships between the public and private sector, the Hub has engaged a total of 160 Japanese companies including ICT solution providers, equipment manufacturers, civil contractors, architects, insurance providers, infrastructure asset owners or operators, and consulting firms. In particular, the Hub procured 10 Japanese consulting firms with a total contract volume of approximately US\$2m to help document and share Japan’s lessons on DRM and resilience on *Disaster Simulation Drills, Building Regulations, Dam Safety, Water Supply & Sanitation, Railways, PPPs, Roads and Landslides, Modernized Hydromet Services, Safer Schools, Seismic Risk Assessment, and Smart DRM*. The consulting firms provided important contributions to capture and

⁴ <https://finances.worldbank.org/Procurement/Major-Contract-Awards/kdui-wcs3> (Accessed in August 2016)

Box 3: Engaging Japan's Private Sector to Strengthen Resilience (cont.)

exchange the relevant Japanese knowledge and expertise with developing countries and the World Bank staff through the Hub's technical workshops and public events.

The Hub also helps Japanese private sector and developing countries to accelerate transferring knowledge and expertise. For example, an earthquake structural engineering company, Miyamoto International, conducted a rapid seismic vulnerability assessment of public buildings in Yangon under the Country Program, Developing Strategic Plans for Disaster Risk Financing, Risk Reduction and Hydromet Services in Southeast Asia.

Also, the Hub connected Central Asia with Fujitsu and KDDI by organizing a knowledge exchange on cell broadcast early warning system during and as a follow-up to the delegation visit in August-September. The Japanese ICT and telecommunication companies shared their expertise and technology to support the Ministry of Emergency Situations of Kyrgyz's decision making on options to enhance the country's disaster warning system.

The Hub has established numerous close collaborations and partnerships, including with the Cabinet Office; MLIT, Ministry of Education, Culture, Science, Sports and Technology (MEXT); Ministry of Health, Labor and Welfare (MHLW); the Ministry of Internal Affairs and Communication (MIC); JICA; the Geospatial Information Authority of Japan; International Centre for Water Hazard (ICHARM); International Sabo Association of Japan; Japan Water Agency (JWA); and JMA; (see Box 4). It also actively engages with academia, research institutes, and the private sector through platforms like the Japan Bosai Platform (JBP).

Box 4: Collaboration with Japanese Ministries

Since the program's establishment in 2014, Japanese ministries, especially MLIT, MHLW, and MEXT, have been a central partner in its success, providing critical technical advice and strategic guidance. Their key contributions include:

- Identifying technical areas and best case studies in which Japan excels in DRM;
- Systematically connecting the Hub with technical experts in these areas; and
- Providing guidance on Hub's strategy and outreach.

Especially, contributions from MLIT have proven highly effective, enhancing the quality of the Hub's resilient infrastructure and urban resilience programs on *Roads, Landslides, and DRM, Hydromet, Flood Management, Building Regulation for Resilience, Seismic Risk Assessment, Safer Schools, Dam Safety, Water Supply and Sanitation, Railways, Infrastructure Prioritization Framework, and PPPs.*

During the 2016-17 period, Japanese ministries exchanged their experience and knowledge on DRM with the World Bank and developing countries through a series of public seminars, workshops, and high-level events. For example, MEXT's participation in an international workshop, "A Road Map for Safer Schools", organized by the Hub in London in January helped India, Nepal, El Salvador, Jamaica, and Malawi enhance their understanding on integration of risk considerations into education infrastructure.

Also, the DRM Hub and TDLC supported the Vietnam DRM team's workshop in Ho Chi Minh City addressing flood risks. The workshop focused on monitoring and data capture, institution and capacity building, and importance of setting operational competencies during implementation phase. It brought together experts from Japan including MLIT and the US to discuss about Flood Operations Center established in their countries to enhance the government's investment design and implementation.

Figure 3: DRM Hub Work with World Bank CoPs to Connect Japanese Expertise

The DRM Hub works closely with leading experts and practitioners across the World Bank to mainstream DRM and integrate Japanese expertise into Communities of Practice (CoP), as shown in Figure 3.

The DRM Hub has been at the forefront of supporting the launch of the World Bank's Resilient Transport CoP in 2016-17 through both Knowledge and Country Program engagements. The Hub is documenting Japanese expert approaches, in areas such as slope stabilization, and then supporting teams to implement solutions in country through the Country Program.

Another example is the Hub's contribution to the Safer School CoP. The DRM Hub conducted a case study to review the Japanese national school retrofitting program and drew lessons for developing countries, informing the World Bank staff about the Japanese experience and knowledge in seismic resilience. The 15th Public Seminar, "Making Schools Resilient at Scale", discussed how the knowledge from Japan applies to support the strengthening of the structural safety of schools in Peru, and highlighted the importance of optimizing investments taking into account the limited human and financial resources in developing countries. In January 2017, MEXT participated in the workshop on "Roadmap for Safer Schools" in London to share Japan's experience in improving the resilience of school infrastructure and the associated financial planning and investments.

Finally, in keeping with its Annual Work Plan 2016-17 and in order to leverage its location in Tokyo, the Program delivered on its planned activities with the Tokyo Development Learning Center (TDLC) (please see Box 5) and the Global Infrastructure Facility (GIF). Key highlights of the partnership with TDLC include:

- **Technical Deep Dives:** The DRM Hub and TDLC partnered to jointly develop and deliver two "Technical Deep Dives" (TDDs) – intensive knowledge exchange events that bring developing countries and development professionals to Japan to understand and apply key lessons and approaches in DRM - on Integrated Urban Flood Risk Management (April 2016) and Hydromet Services (September 2016).

- **Knowledge Exchange:** The DRM Hub hosted over 50 knowledge exchanges in 2016-17 (see Section 4 – Results), exceeding its Annual Work Plan goal of over 20 knowledge exchanges and workshops utilizing TDLC’s partnership capabilities and facilities.
- **City Partnership Program (CPP):** Building on the DRM Hub’s Urban Resilience focus area, the Hub supported TDLC to secure CPP work planning agreements on DRM technical engagements with Kobe, Toyama, and Yokohama, including a Search and Rescue Training for Indian Officials (Kobe, March 2017) and a planned TDD on Seismic Risk Management (Kobe, 2017-18). At TDLC’s and Toyama City’s request, the DRM Hub also delivered a lecture and connected to DRM experts at Toyama’s Resilient Cities Summit (November 2016)
- **Knowledge Notes:** The DRM Hub developed 17 knowledge notes and products under its various engagements and worked with TDLC to enhance distribution and accessibility of the information produced.

In 2016-17, the DRM Hub also expanded its collaboration with GIF and the World Bank’s Public Private Partnership (PPP) and Infrastructure Cross-Cutting Solutions Area, starting two Knowledge Programs on “Resilient Infrastructure PPPs – Contracts and Procurements,” implemented with GIF, and “Infrastructure Prioritization Framework and Resilience,” implemented with PPP CCSA (Please see Table 3).

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Box 5: Increasing the Focus on Knowledge Exchange, including Technical Deep Dives (TDDs)

In 2016-17, the DRM Hub increased its focus on knowledge exchanges to ensure that developing country officials and World Bank teams have the capacity and connect to the technical expertise they need to prepare and implement high-quality DRM solutions. The Hub conducted a variety of knowledge exchanges in person and using VC expert deployments, including with Central Asian countries on ICT solutions for early warning and with Nepal and Serbia on road geohazard risk management. The DRM Hub also partnered with TDLC to prepare and deliver two TDDs – Integrated Urban Flood Risk Management and Hydromet Services – bringing together clients and World Bank teams preparing projects in Afghanistan, Argentina, Bhutan, Ethiopia, Ghana, Honduras, Indonesia, Lao PDR, Madagascar, Nicaragua, Nigeria, Solomon Islands, Sri Lanka, Tonga, Uruguay, Vietnam, and Zambia, with Japanese experts from MLIT, MIC, JICA, JMA, JWA, ICHARM, JBP, NTT DOCOMO, NHK ITEC, among many more. To date, the DRM Hub, often working with TDLC, has provided key follow-on support to clients and teams in Afghanistan, Ghana, Nicaragua, Sri Lanka, Tonga, and Vietnam – with many of these support activities are detailed throughout this report. More than 90% of the 50 participating clients and team members rated the TDDs as excellent or effective knowledge exchanges (with an average rating of 4.7 out of 5.0), and participants noted the following:

“After learning from Japan’s experience and from other countries, we were able to evaluate our work from a new perspective. We found both weaknesses and strengths we had not previously identified and hope to keep working to address our challenges upon our return to Uruguay.”—Gimena Bentos Pereira, Director of Studies and Sanitation Services, Intendencia de Montevideo, Uruguay

“The Technical Deep Dive is the best of the World Bank. The overall organization and in particular the balance between field visits and in room technical discussions and very inspiring experience sharing.”—Christophe Prevost, Senior Water and Sanitation Specialist, Water Global Practice, World Bank Group (working with Buenos Aires, Argentina)

“The TDD is an opportune moment to learn from Japan - both as one of the most disaster prone countries in the world and as a country which has accumulated institutional, technological, service delivery, and disaster response capability.”—Alemseged W. Yohannes Bedane, DRM Specialist, GSURR, World Bank Group (working with Ethiopia)

3.3 DRM Hub Supporting Developing Countries

The Hub is increasingly ensuring that Country Program support benefits from the expertise that the Knowledge Program and other resources and connections the Hub can supply. Key examples to date – both in developing countries and in Japan - include:

- In **Armenia, Kyrgyz Republic, and Tajikistan**, the National Disaster Management Agencies of these countries have engaged experts, including Japan’s Cabinet Office, the Tokyo Metropolitan Government, and telecom provider KDDI, to implement improved emergency and disaster drill exercises and apply mobile early warning.
- For **Vietnam**, the Technical Deep Dive on Integrated Urban Flood Risk Management in April 2016 opened support from the DRM Hub and TDLC for Ho Chi Minh City (HCMC) to address flood risks. The Hub and TDLC helped the World Bank team in Vietnam collect expert advice from MLIT, JICA, University of Tokyo, and Toyo University in order to enhance the quality of a flood control center in HCMC as part of a larger-scale investment in flood risk management. The Hub and TDLC then deployed expert practitioners from the City of Yokohama to advise HCMC officials in September 2016.

- In **Ghana**, the project is strengthening the technical capacity of flood management institutions in the Volta basin by building on the partnership program established between Japanese and Ghanaian universities through the Enhancing Resilience to Climate and Ecosystem Changes in Semi-Arid Africa (CECAR-Africa) Project. Partners will deliver technical training courses in hydrology, meteorology, and DRM to Ghanaian practitioners and officials. The CECAR program is supported by the Japan International Cooperation Agency (JICA) and the Japan Science and Technology Agency (JST) for the benefit of Ghanaian and Japanese institutions.
- In **India**, Japan Water Agency (JWA) is providing a just-in-time service to build the capacity of Central Water Commission and dam engineers on seismic emergency preparedness and response. As part of this effort, JWA is developing a Seismic Emergency Response Manual for Ichari Dam in Uttarakhand, which will be disseminated to 250 dams in India under the World Bank's lending operation on Dam Rehabilitation and Improvement Project (DRIP). In conjunction with this effort, the Hub's knowledge project on Dam Safety and Disaster Resilience is producing a case study on Japan to capture and share best practices with developing countries.
- The Resilient Transport Infrastructure TA Program is assisting **Lao PDR, Sri Lanka, Serbia, Kenya, and Paraguay** to increase the resilience of their Bank-financed transport sector interventions, primarily focusing on roads. The project will utilize the Road Geohazard Risk Management Toolkit developed under the Knowledge Program. The Hub is also developing a Guidance Note and a case study on Japan to capture best practices in resilient rails development and operation.

As part of country-level efforts to engage Japanese partners, the Hub coordinates closely with JICA (See Box 6). The Hub has facilitated frequent exchange between JICA and World Bank teams in formulating technical assistance projects, providing an important entry point for ongoing operational collaboration.

Box 6: Examples of country-level collaboration with JICA

A number of examples demonstrate the deepening partnership between JICA and the World Bank, enabled by the Hub.

Bangladesh: As a result of a joint launch of JICA and World Bank parallel investments in urban resilience in Dhaka, Bangladesh, the Hub has approved a follow-up technical assistance grant for “Bangladesh - An Integrated Approach to Enhance Urban Resilience in Dhaka (US\$0.5 million)” that will further develop operational links between the investments. This country program was developed through the Hub-led knowledge exchange events including the 17th Disaster Risk Management Public Seminar “JICA-World Bank Collaboration on Disaster Risk Management: A Focus on South Asia in December 2016” and “Knowledge Exchange on Business Continuity Planning in Water Sector” in November 2015.

Central Asia: Following the Hub-supported regional forum for seismic resilience in Almaty, Kazakhstan in 2015, JICA seismic risk experts have further exchanged with the World Bank team on the development of a series of TA and investment programs. As a result, the Hub has approved follow-up technical assistance grants for Kyrgyz Republic, Tajikistan, and Uzbekistan. The Hub also organized an Expert Visit inviting government representatives from Armenia, Kyrgyz Republic, and Tajikistan in September 2016. By coordinating meetings and discussions with a wide range of national agencies and municipal authorities in Japan, the Hub was able to provide an opportunity for these countries to improve their respective crisis management systems by learning first-hand about Japan’s experience in disaster preparedness and response systems at national and local levels.

Myanmar and Lao PDR: Consultations with JICA and review of Yangon drainage studies developed by JICA with support from the Government of Japan help shape the focus of investments under the proposed IDA investment. Miyamoto International was hired a seismic assessment in Yangon. Furthermore, the Hub invited Lao PDR government officials, including agencies involved in the planned IDA investment, to the Technical Deep Dive (TDD) on Urban Flood Risk Management in April 2016 and another TDD on Hydromet services for early warning systems in September 2016. In both cases, the Hub helped the clients meet with Japanese experts and enabled them to translate their acquired Japanese DRM knowledge into Lao PDR context through the proposed IDA investment.

Nepal: Building on strong partnership across South Asia, JICA and World Bank DRM teams have continued to work jointly to support the Government of Nepal in designing and financing its housing recovery program after the devastating 2015 earthquakes. The Hub’s resource and coordination helped the World Bank DRM teams mobilize the funds extremely fast after the disaster and enabled them to launch the entire housing reconstruction under a compressed preparation timeline,

Tonga and Pacific Islands: With support from the Hub, a national Hydromet official, working on country program TA project Pacific Resilience Program (PREP), participated in JICA’s Himawari Satellite and hydromet data training in Fiji. The Hub supported the task team in investigating the potential for use of the extensive network of Japanese on-the-ground volunteers in delivery of community based activities of PREP.

South Asia JICA-WBG Operational Workshop: In December 2016, operational DRM teams from both institutions working in SAR briefed their counterparts on current activities and planned new collaboration, building on the Bangladesh and Nepal examples above. This workshop set out a framework for continued JICA-WBG collaboration based on issue advocacy, technical complementarity, and financing support, and led to improved collaboration and sharing of project data and plans in Afghanistan, Bangladesh, India, Nepal, Pakistan, and Sri Lanka. The workshop was concluded with the 17th Disaster Risk Management Public Seminar “JICA-World Bank Collaboration on Disaster Risk Management: A Focus on South Asia.” As a follow-up action, the Hub supported the World Bank DRM team in preparing “Phase 2: Promoting Resilient Infrastructure in South Asia (US\$1 million)” which aims to support Nepal, India, Afghanistan, Bhutan, and Bangladesh in reducing disaster risks through focusing on developing priority infrastructure sectors identified in Phase 1 of this country program.

4. results reporting

The DRM Hub monitors the results of the Program through (i) Output-level, (ii) Outcome-level, and (iii) World Bank Investment Leveraging and Beneficiary indicators.

4.1 Output Reporting

4.1.1 Country Program Results

Table 4 summarizes the outputs delivered by the Country Program during 2016-17, demonstrating progress against the 12 Output Indicator targets set out in the Annual Work Plan 2016-17. Across the portfolio, TA projects met or exceeded targets in four indicators, approached target levels in four indicators, and remain in progress for four indicators.

These initial results indicate that TA projects are demonstrating very strong performance in Pillar 1 – Risk Identification. Additionally, key policy and implementation aspects of Pillar 2 – Risk Reduction, Pillar 3 – Preparedness, and Pillar 4 – Financial Protection have also seen very high delivery performance. However, supporting risk-informed land use planning, investment strategies, and contingency planning will require greater focus by implementing task teams to complete in a timely manner.

As the portfolio includes many newly approved projects, continued implementation is expected to accelerate output production.

Table 4: Summary of outputs delivered by region 2016-17

Sendai Priority for Action	GFDRR Pillar of Action	Output Indicators	Targets (Work Plan 2016-17) (A)	Actual (2016-17) (B)	% Achievement (B / A)	Progress
Priority 1: Understanding Risk	Pillar 1: Risk Identification	Data platforms established	7	5	71%	Approaching Target
		Risk assessments conducted	14	15	107%	Met / Exceeded Target
		Hazard mapping conducted	7	8	114%	Met / Exceeded Target
Priority 2: Strengthening Disaster Risk Governance to Manage Disaster Risk	Pillar 2: Risk Reduction	Policies and legal frameworks strengthened	14	13	93%	Approaching Target
		Building code implementation strengthened	3	3	100%	Met / Exceeded Target
		Land use planning systems strengthened	8	0	0%	In Progress
Priority 3: Investing in Disaster Risk Reduction for Resilience	Pillar 4: Financial Protection	Risk reduction investment strategies informed	16	7	44%	In Progress
		Sovereign disaster risk financing strategies strengthened	1	5	500%	Met / Exceeded Target
		Catastrophe risk markets strengthened	1	0	0%	In Progress
Priority 4: Enhancing Disaster Preparedness for Effective Response and “to Build Back Better” in Recovery, Rehabilitation and Reconstruction	Pillar 3: Preparedness	Forecasting services strengthened	5	4	80%	Approaching Target
		Early warning systems strengthened	5	3	60%	Approaching Target
		Contingency planning and emergency preparedness services strengthened	15	2	13%	In Progress

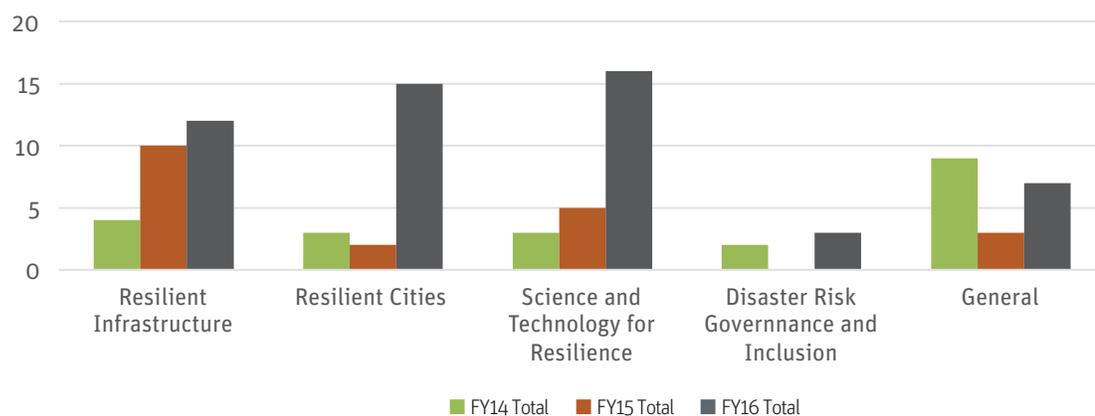
4.1.2 Knowledge Program Results

The DRM Hub collects a series of output indicators to capture the direct results of its activities, both in the (i) the development and dissemination of knowledge products and (ii) knowledge exchange and deployment of expertise. All targets set in the 2016-17 Work Plan were met or exceeded.

The DRM Hub produced 17 knowledge products in 2016-17, which are detailed in Annex 2. These included “Making Schools Resilient at Scale: The Case of Japan” (Safer Schools KP), Modernization of Japan’s Hydromet Services (Hydromet Services KP), Japanese Seismic Preparedness Map Technical Handbook (Seismic Risk Identification and Decision Making KP), and the “Social Protection and Labor (SPL) - Disaster Risk Management (DRM) Toolkit” (Social Risk Management KP), and the “Learning from Disaster Simulation Drills in Japan” (which was developed through an output of a Country Program TA project). This exceeded the 2016-17 Work Plan target of 10 knowledge products (e.g., knowledge notes, operational guidance), while the launches of the “Building Regulation for Resilience” Report and the “Roadmap for Safer Schools” Report met the two major publication target.

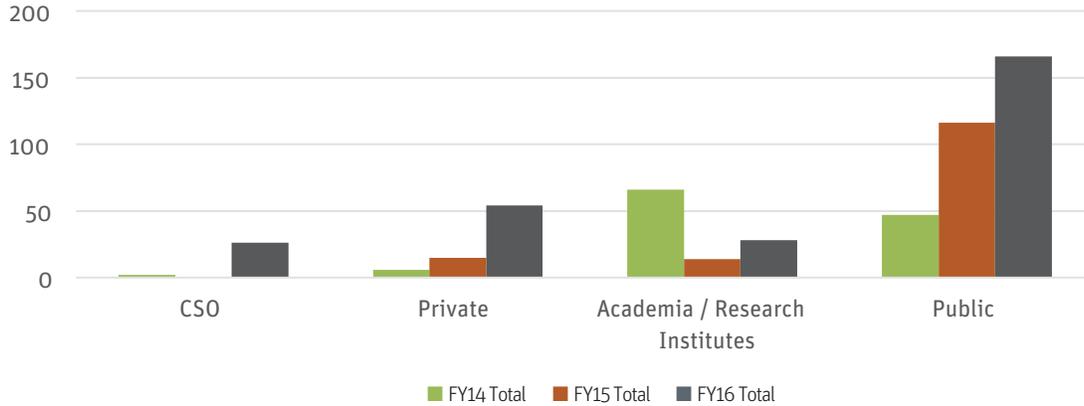
The Hub organized 50 knowledge exchanges in 2016-17, including public seminars, technical deep dives, roundtables, and international conferences – exceeding the target of 20 operational knowledge exchanges in the 2016-17 Work Plan. (see Figure 4).

Figure 4: Knowledge Exchange Events by Focus Area



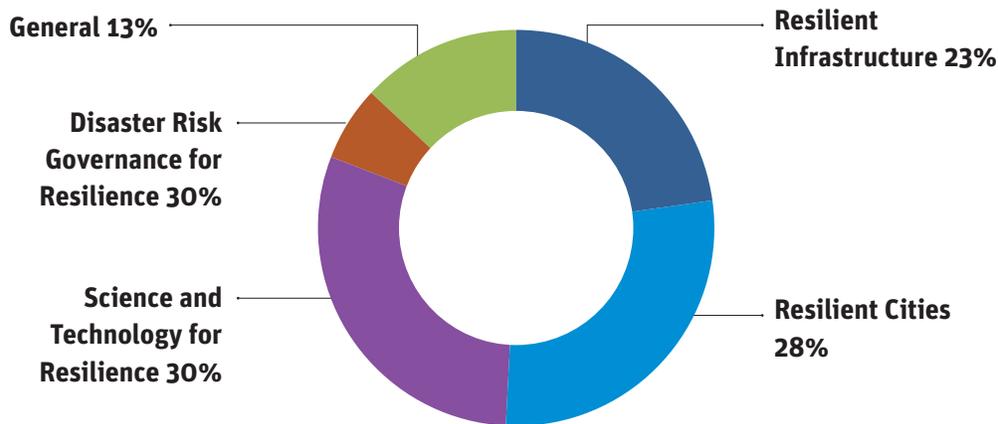
More than 280 Japanese experts from the public sector, the private sector, and academia and research institutes participated as speakers, advisors, and commentators at knowledge exchange events organized by the Hub during 2016-17. The Hub connected Japanese DRM experts to the World Bank’s Spring Meetings in Washington, DC (April 2016), several sessions at the 2016 Understanding Risk Forum in Venice (May 2016), APEC DRFI Conference (February 2017), as well as Urban Week 2016 in Singapore (March 2016), among others, meeting the target of connecting to four key policy and relevant conferences. (See Figure 5).

Figure 5: Japanese Expert Engagements (by Organization Type)



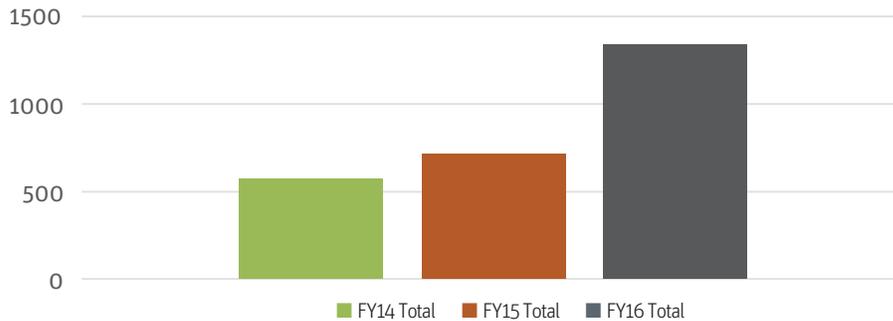
The Hub also leaned on the wealth of knowledge within Japan to advance DRM during the reporting period. Japanese experts were primarily engaged on “Urban Resilience” including building regulations, and “Science and Technology for Resilience,” such as urban floods and seismic risk identification (see Figure 6). For example, the Hub, in partnership with TDLC, held two technical deep dives on urban floods and hydromet services in April and September 2016 with MLIT, JMA, ICHARM, and JWA to facilitate Japan’s lessons are being integrated into a larger body of work the World Bank is advancing.

Figure 6: Japanese Expert Engagement by Focus Area (2014-17)



To help strengthen the DRM capacity of vulnerable countries, the Hub develops trainings, targeted exchange programs, study tours, and public seminars. In 2016-17, over 1,350 participants from Japan and globally, including 150 from developing countries, took part in these events (see Figure 7).

Figure 7: Clients and Overall Audience of Knowledge Exchanges



Box 7: Visibility of the Hub

The DRM Hub serves as a knowledge center and has increased its visibility with the delivery of key knowledge products, convening of knowledge exchanges, and participation in partner events. The Hub’s partnership with Japanese Centers of Excellence has enhanced its visibility by participating or co-organizing high-level events such as “World Tsunami Awareness Day: Towards Resilient Recovery through Gender and Diversity Perspective” in October together with Japan Women’s Network for Disaster Risk Reduction and JICA.

In 2016-17, the Hub’s activities were featured on over 50 outlets in Japan and internationally, such as Japan’s NHK, Prevention Web, as well as JICA and the World Bank’s internal and external websites. For example, Mainichi published an op-ed by Francis Ghesquiere, the head of GFDRR, on the underestimated effects that disasters have on the poor and highlighting the Japan-World Bank Program as a way to enhance the resilience of developing countries’ investments, particularly in infrastructure.

Additionally, total visitors to the DRM website up to January 2017 surpassed 120,000 since the Program’s launch, with over 75,000 visiting the site in the last 12 months. The number of visitors tripled compared to the same period last year.

Annex 3 provides additional highlights.



4.2 Outcome Reporting

This section analyzes the progress towards achievement of intermediate outcomes of the portfolio of both the Country and Knowledge Programs.⁵ The Program has adopted the World Bank's standard categories of intermediate outcomes for advisory services and analytics: (i) knowledge deepened; (ii) client capacity increased; (iii) innovative approaches and solutions generated; (iv) development financing informed; and (v) policy/strategy informed.

Each outcome above represents a behavior change expected as a result of activities of the Program, which will in turn impact the resilience of the lives and livelihoods of vulnerable people.

The following section presents indicative intermediate results across these five outcomes for each pillar of the program: risk identification; risk reduction; preparedness; financial protection.⁶ Aggregated across the four DRM pillars, projects have reached 71% of the outcome targets for knowledge deepened, 70% for client capacity increased, 43% for innovative approaches and solutions generated, 64% for development financing informed, and 55% for policies and strategies informed.

New explicit outcome targets are added as new projects are approved. Therefore, the percentage of achievement will increase as each project delivers outputs, demonstrates intermediate outcomes, and nears completion.

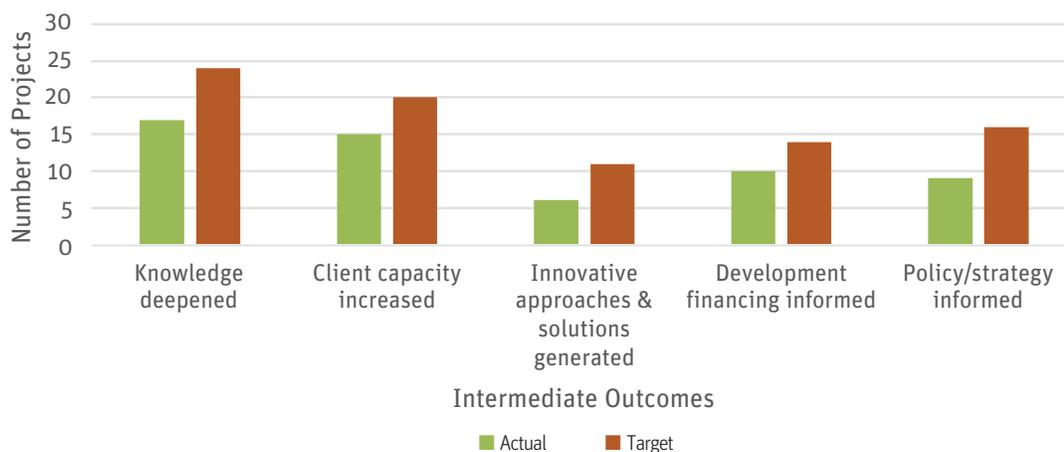
4.2.1 Improved identification and understanding of disaster risks

Figure 8 shows that the Program's activities to improve identification and understanding of disaster risks has focused intensively on deepening the knowledge and capacity of client countries, and in some cases has already succeeded in directly influencing investment projects.

Overall indicative progress towards targets is on track. Results include Afghanistan, where the project has delivered a series of hazard risk profiles to national counterparts, who are using the results to improve communication of disaster risks across government and with the public. In Central America, the Japan-supported grant trained 12 public servants from key institutions in Honduras, Nicaragua and Guatemala in natural hazards evaluation in November 2016. As a result, public officials and other key stakeholders at the municipal level have demonstrated an enhanced understanding of risks and resilience of their urban systems. Another example comes from Technical Deep Dives on Integrated Urban Flood Risk Management and Hydromet Services, where Japanese experts helped clients and World Bank teams increase their risk identification capacity, and deepen their knowledge.

⁵ For further detail on project-specific results, please see the separate 2016-17 Program Profiles Report.

⁶ As defined in the Program Concept Note and Operations Manual; results are based on self-reported data from project teams – further verification is expected and results are therefore subject to review.

Figure 8: Progress towards Risk Identification targets

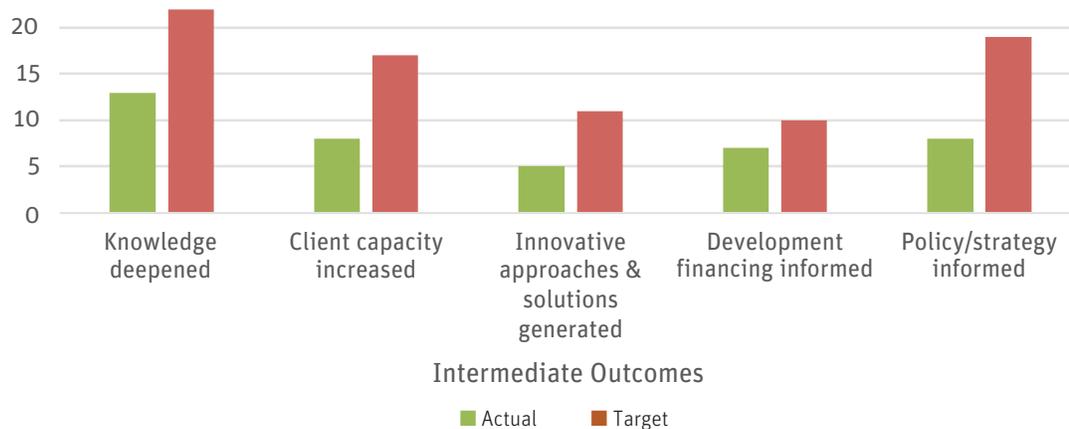
Some overall challenges reported in achieving improvements in national risk identification include the lack of weak institutional capacity and leadership around data management issues on the government side, and lack of skills in the local market for risk assessment and other technical work.

4.2.2 Avoided creation of new risks and reduced existing risks in society

Figure 9 indicates that, of those projects seeking to inform risk reduction policy or strategy, around 50% of projects report achievement of overall targets to date. Of those projects seeking to deepen knowledge in risk reduction, around two thirds report achievement of their target so far. There are a number of important success stories in avoided creation of new disaster risks and reduced existing risks.

At an aggregate level, the Program has directly influenced the design or implementation of a portfolio of US\$1.55 billion in investment project or development policy financing. (Please see section 4.3 on World Bank Investment Leveraging)

At the policy/strategy level, in the Philippines the project has developed risk reduction measures to be integrated in an updated National Building Code of the Philippines and its Implementing Rules and Regulations. In Armenia, data sharing with donors and partners under the project has informed the resilience component of the Local Economy and Infrastructure Project (US\$55 million). DRFI diagnostics delivered under the grant have also informed the upcoming Strategic Country Diagnostic (SCD) and Country Partnership Framework (CPF).

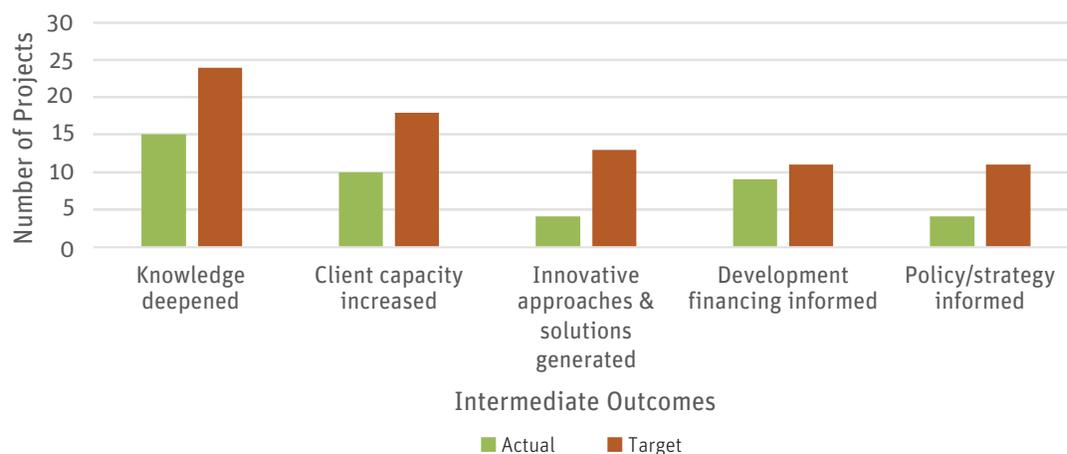
Figure 9: Progress towards Risk Reduction targets

On the development financing side, support to the flood hazard assessment of the Oti River Basin, for example, directly supports the formulation of proposals to the Green Climate Fund (GCF). The grant from Japan has provided direct input to the analysis and required feasibility studies for the Strengthening Hydro-meteorological Services in Togo and Ghana project (US\$20-25 million). In Turkey, Japan-financed TA supported appraisal studies for the Education Infrastructure for Resilience Project (US\$158 million), which aims to support Turkey to improve the access to education for the Syrians under Temporary Protection and host communities by expanding disaster resilient education infrastructure in priority provinces. Moreover, the project has built capacities of the technical team at Turkey's Ministry of Education in operational and seismic risk assessment skills, in advance of planned investment in safe schools nationwide. Finally, in Tajikistan, the Program has supported a natural hazard assessment of 19 flood protection and bridge rehabilitation sites, which will directly inform site-specific investment feasibility of the Strengthening Critical Infrastructure against Natural Hazard Project (US\$20 million) in Tajikistan, so as to ensure risk informed reconstruction and construction practices.

4.2.3 Improved early warning and preparedness at national, local and community level

Figure 10 summarizes overall progress towards targets to improve national, local and community level preparedness. Again, there is some way to go to meet targets, but overall progress is satisfactory. There is some delay in informing policies and strategies, and developing specific solutions, but significant progress has been achieved in deepening national and local preparedness knowledge.

Figure 10: Progress towards Preparedness targets



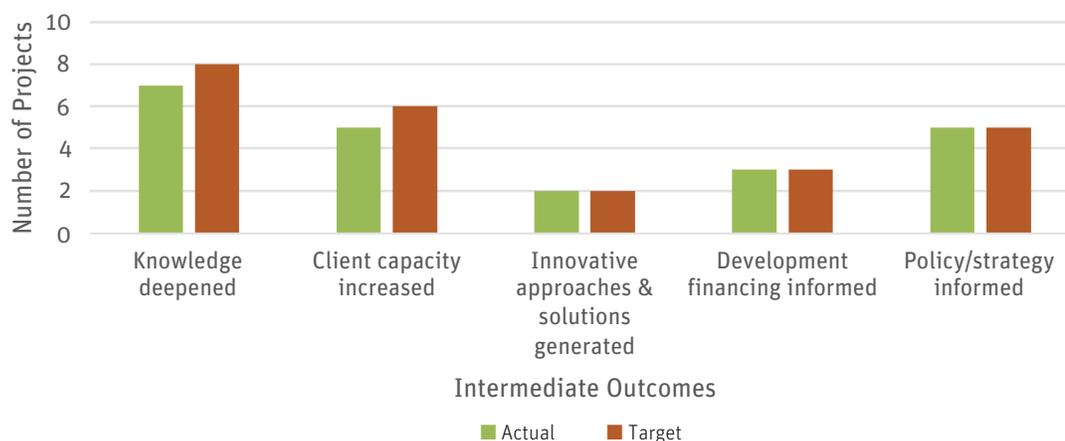
In Nicaragua, for example, 14 participants from national hydromet and preparedness agencies participated in a training provided by the project, covering forecasting, technology and data management, which has generated more focused vision and understanding of next steps to improve domestic early warning and preparedness. In Goma, Democratic Republic of Congo, two workshops in January and February 2017 consolidated and updated existing contingency plans for preparedness for volcano eruption. In addition, the project trained two staff from the Goma Volcano Observatory on GIS and remote detection. Trainings on risks mapping will be delivered in 2017 to observatory and Civil Protection staff.

The occurrence of disasters is a challenge to keep on track with preparedness activities with national or local disaster management agencies. In the Pacific, for example, the impact of cyclones has a regional impact, with resources and manpower being diverted to assist national governments with response efforts. Additionally, the limited implementation experience and regionally thin capacity present an ongoing challenge in attracting sufficiently qualified staff in preparedness and early warning roles.

4.2.4 Increased financial resilience of governments and private sector

Figure 11 highlights the very strong progress in achievement of financial protection targets of the Program through a number of high profile DRFI programs. While some further knowledge and capacity building is required, many of the programs have already achieved significant progress in informing new DRFI strategies, innovative solutions and operations.

Figure 11: Progress towards Financial Protection targets



In Southeast Asia, the Program has supported regional coordination between Cambodia, Lao PDR and Myanmar, and capacity-building in DRFI, including most recently meetings and knowledge events at an OECD conference in Paris. The project is assisting in the development of the proposed Southeast Asia Disaster Resilience Insurance Facility, which promises to be first facility of its kind in the region. Activities have included financing the design of a near real-time flood mapping and loss estimation modelling tool for Southeast Asia. It has also financed the development of good practice notes on the role of Ministries of Finance in DRM and DRFI. In Lao PDR, the grant contributes to the DRFI dialogue, which includes the development of Standard Operating Procedures for the State Reserve Fund.

In the Pacific, support to the third season of the PCRAFI insurance program provided a critical bridge for country participation and led to a subsequent IDA lending operation to finance premiums for participating IDA countries. More recently, the PCRAFI MDTF was established with grant from Germany, Japan, UK and US in 2016 under the G7 InsuResilience Initiative, which highlighted PCRAFI as one of the critical activities to achieve the goal of insuring vulnerable people against climate related disasters. The PCRAFI Facility was established by participating PICs and donors in September 2016 and started providing insurance to participating PICs during its fifth season from November 2016.

Challenges in achieving lasting, nationally owned DRFI strategies and programs are significant. In Southeast Asia, developing an innovative financial instrument in the context of low capacity and limited data is technically challenging. The necessary coordination between countries to make the Facility a success is politically complex too. In the Pacific, while other PICs have shown interest in joining the regional catastrophe risk insurance facility, financial constraints and limited variety of insurance products has been a limiting factor. The Program will continue to support the development of new insurance products in accordance with the demands from the PICs.

4.3 World Bank Investment Leveraging and Beneficiaries

This report has captured each project's specific effect on World Bank investment leveraging and number of beneficiaries (Please see the **2016-17 Program Profiles Report for individual grant reporting**).

As of this 2016-17 Annual Report, a total of 9 country projects have been found to be instrumental in leveraging World Bank investments. Together, these projects have directly influenced the design or implementation of a portfolio of US\$1.55 billion in World Bank projects. These include:

- **Pacific Catastrophe Risk Insurance Pilot Project – PCRAFI (\$1.00 million) and Scaling-up risk reduction and risk financing in the Pacific Island Countries – PREP (\$2.35 million).** The DRM Hub supported the PCRAFI Pilot Program into its third season (November 2014–October 2015), when participating PICs did not have sufficient financial capacity to self-sustain the program. Now, in its fifth season, the program's structure has advanced under the Pacific Resilience Program (PREP), which is also co-financed by the DRM Hub, launching a sustainable captive insurance business model, complemented by reinsurance provided by Sampo Japan Insurance, Mitsui Sumitomo Insurance, Tokio Marine & Nichido Fire Insurance, among others. The Hub's TA project support for PREP has helped leverage additional resources from IDA, PPCR, and GEF and the overall PREP has \$32 million in financing. Under the PREP, premium financing for the PICs has been secured until October 2018.
- **Philippines: Enabling Scaled up Risk Reduction Investments in the Philippines Project (\$2.35 million).** The Philippines secured its Second Disaster Risk Management Development Policy Loan with a CAT-DDO (P155656, US\$500 million), allowing it to access immediate financing in the case of a qualifying natural disaster. This TA project from the Hub is directly supporting the government to achieve its policy commitments under this loan, providing best practice solutions in DRM and resilient infrastructure.

The active multi-sector country program portfolio of 33 technical assistance (TA) projects is benefitting approximately 5.7 million people in 47 countries to build disaster and climate resilience. The number of beneficiaries for each grant is defined as people (in communities, cities, countries, regions, and/or households) benefitting or receiving support that can be attributed to the grant TA project. The estimated number of beneficiaries for each grant project was calculated utilizing the global INFORM model.⁷

Table 5: World Bank Investment Leveraging and Beneficiaries in 2016-17

Regions	Leveraging (US\$)	Number of Beneficiaries (People)
AFR	\$52 million	380,000
EAP	\$593 million	1,100,000
ECA	\$178 million	100,000
LAC		350,000
MNA		45,000
SAR	\$730 million	3,750,000
Total	\$1.55 billion	5,725,000

⁷ The INFORM model provides a risk profile for every country, which consists of a value between 0-10 for the INFORM Risk Index and all of its underlying dimensions, categories, components and indicators. All the results are comparable within and between countries. For more information, please refer to the 2016-17 Program Profiles Report.

5. looking ahead

The Hub has achieved rapid success in building a diverse portfolio of technical assistance projects, and establishing the foundations for a sustained strategic presence in Tokyo. This has resulted from successes in building visibility, gaining credibility with internal and external stakeholders, and implementing effective knowledge programs that connect Japanese technical communities with developing countries. Reflecting on the first three years of the Hub's operations, a number of key observations are emerging to drive future planning:

1. **The Program is increasingly recognizing the scale of demand for resilience-enhancing investments from developing countries and the importance of its work to effectively leverage the World Bank to this end.** The 2016-17 Annual Report has identified the leveraging effects of the Program to date, providing a framework for continued monitoring and targeting. The Program's ability to deliver technical assistance and expertise effectively will be increasingly important as the CCAP and accumulating client demand spur the WBG to deliver more investment for DRM.
2. **The Program has found value in working with countries at all income levels, and continued focus is needed to tailor support where the DRM Hub can best add value.** The Hub's TA grants can prove a critical part of the integrated financing package needed to achieve disaster resilience. For IDA countries facing extreme disaster threats, the Program will work to build on the emerging opportunities that IDA-18 is opening, such as the special theme on Climate Change, the IDA Crisis Response Window (CRW), and the availability of the CAT-DDO instrument to IDA countries to meet financing gaps and stimulate action on risk reduction. In middle-income IBRD countries, the focus will be on building on the results of technical assistance projects to date, as well as from countries' investments to date, and adapting and delivering new business lines with increasingly sophisticated clients, where the highest potential for investment exists. Here, the Program will put additional focus on the application of the Hub's knowledge products.
3. **The Program aims to complement a country-based focus with an expanded role in global initiatives through the knowledge focused work of the Hub.** The WBG's Climate Change Action Plan (CCAP) commits to increasing disaster- and climate-resilient investments. The new Global Crisis Response Platform (GCRP) encompasses a host of tools and funds to scale up and coordinate our work on crises. Through targeted knowledge programs, the Hub will aim to plug knowledge gaps and stimulate new business lines in line with these corporate mandates and commitments.
4. **Having built a strong network with the Japanese private sector and centers of excellence, the Program will remain focused on sectors where demand for DRM services is highest and opportunity for Japanese partnership the greatest.** This includes not only core DRM business lines but also expanded engagements with sectoral partners, particularly transport and water sectors. This means that engagements must continue to show (i) planned World Bank client demand and (ii) relevant Japanese supply of expertise and solutions. For example, in Transport, the WBG aims to reach US\$2 billion in lending for adaptation

over FY16–FY20 and enhance the resilience of the road portfolio. The CCAP commits the WBG to “partner with the GFDRR and other donors to create a knowledge platform to build climate resilience in the roads sector.” This work has already begun under the Japan Program, through TA to enhance road design and operation in country, and Knowledge Programs on Road Geohazard Risk Management, which has engaged MLIT, JICA, private sector engineering expertise, and academic institutions focused on these issues. This is the model for bringing together knowledge and expertise from Japan and in-country TA engagements in order to drive WBG investment in DRM.

5. **The DRM Hub has proven a critical part of Program’s implementation, establishing itself as both a necessary and effective (i) convener and connector and (ii) knowledge generator, as the only dedicated facility on DRM knowledge within the WBG.** The Hub has played an important role in building a more frequent dialogue between World Bank and JICA operational and thematic teams, connecting (i) WBG and JICA teams on their current and planned investments (e.g., joint South Asia operational workshop and seminar), (ii) WBG projects and clients to JICA’s effective capacity building (e.g., hydromet training), and (iii) WBG and JICA DRM knowledge and best practices (e.g., climate screening tools). The Hub has also established technical leadership in key - but underdeveloped – disaster resilience themes, including building regulation, resilient transport, risk identification, drawing in Japanese expertise to this work. Continuing to fulfill the Program’s role to connect operational projects and generate DRM knowledge will mean a continued focus of GFDRR to maintain visible and effective DRM Hub operations.

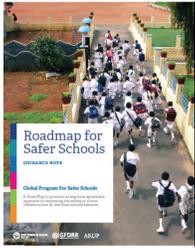
annex 1: country program support
for the Sendai Framework

Project Name	Countries	Priority 1 Understanding disaster risk	Priority 2 Strengthening disaster risk governance to manage disaster risk	Priority 3 Investing in disaster risk reduction for resilience	Priority 4 Enhancing disaster preparedness for effective response and to "Build Back Better" in recovery, rehabilitation and reconstruction
Strengthening Early Warning and DRM Capacity in Afghanistan	Afghanistan	✓	✓	✓	✓
Armenia National Disaster Risk Management Program	Armenia	✓	✓	✓	✓
South Asia Promotion of Resilient Infrastructure	Bangladesh	✓	✓	✓	✓
Bhutan Weather, Disaster and Climate Services Improvement project	Bhutan	✓	✓		✓
Innovations in DRM Decision Making in Brazil	Brazil	✓	✓	✓	
Developing Strategic Plans for Financial Protection Mechanisms in South East Asia	Cambodia	✓	✓		✓
Africa Hydromet Technical Assistance	Chad	✓	✓	✓	✓
Women for Resilience Program	Colombia	✓	✓	✓	✓
Strengthening Disaster Risk Management and Resilience of Central American Municipalities Project	Costa Rica	✓		✓	
Women for Resilience Program	Djibouti	✓	✓	✓	✓
Improving DR Congo's capacity to manage, monitor and respond to natural hazards in the region of Goma	DRC	✓			✓
Strengthening DRM in Egypt Project	Egypt	✓	✓	✓	✓
Africa Hydromet Technical Assistance	Ethiopia	✓	✓	✓	✓
Mainstreaming Disaster Risk Management in El Salvador's Education Sector	El Salvador	✓		✓	
Pacific Resilience Program	Fiji	✓		✓	
Ghana - Strengthening Flood Management in Ghana	Ghana	✓			✓
Strengthening Disaster Risk Management and Resilience of Central American Municipalities Project	Guatemala	✓		✓	
Strengthening Climate Information and Early Warning Systems to Support Climate-Resilient Development in Honduras and Nicaragua	Honduras	✓	✓	✓	✓
Improving Service Delivery of DRM in India	India	✓	✓	✓	✓
Women for Resilience Program	Jordan	✓	✓	✓	✓
Resilient Transport Infrastructure Program	Kenya	✓	✓	✓	
Strengthening Disaster Risk Management in the Kyrgyz Republic	Kyrgyz Republic	✓	✓	✓	✓
Developing Strategic Plans for Financial Protection Mechanisms in South East Asia	Lao PDR			✓	
Women for Resilience Program	Lebanon	✓	✓	✓	✓

continues

Project Name	Countries	Priority 1 Understanding disaster risk	Priority 2 Strengthening disaster risk governance to manage disaster risk	Priority 3 Investing in disaster risk reduction for resilience	Priority 4 Enhancing disaster preparedness for effective response and to “Build Back Better” in recovery, rehabilitation and reconstruction
DRM component for Sustainable Energy Industry Development Project/ Marshall Islands - Pacific Catastrophe Risk Insurance Pilot	Marshall Islands			✓	✓
Pacific Resilience Program	Micronesia			✓	
Developing Strategic Plans for Financial Protection Mechanisms in South East Asia	Myanmar			✓	
Disaster-Linked Social Assistance Delivery Support System Development in Nepal	Nepal				✓
Strengthening Climate Information and Early Warning Systems to Support Climate-Resilient Development in Honduras and Nicaragua	Nicaragua	✓	✓	✓	✓
Africa Hydromet Technical Assistance	Niger	✓	✓	✓	✓
Technical review and capacity building program on Climate induced risks in Pakistan	Pakistan	✓	✓	✓	✓
Strengthening Disaster Risk Management and Resilience of Central American Municipalities Project	Panama	✓		✓	
Resilient Transport Infrastructure Program	Paraguay	✓	✓	✓	
Mainstreaming DRM in Peru's Education Sector Project	Peru			✓	
Enabling Scaled up Risk Reduction Investments in the Philippines Project	Philippines	✓	✓	✓	✓
DRM component for Sustainable Energy Industry Development Project	Samoa			✓	✓
Resilient Transport Infrastructure Program	Serbia	✓	✓	✓	
Africa Hydromet Technical Assistance	Senegal				
Resilient Transport Infrastructure Program	Sri Lanka	✓	✓	✓	
Strengthening Disaster Resilience in Tajikistan	Tajikistan				
Pacific Resilience Program	Tonga	✓	✓	✓	✓
Streamlining DRM in Municipal Investment and Urban Planning	Tunisia	✓	✓	✓	
Building Resilience in Turkey Project	Turkey	✓	✓	✓	
Strengthening Disaster Resilience in Uzbekistan	Uzbekistan			✓	
DRM component for Sustainable Energy Industry Development Project	Vanuatu			✓	✓
Supporting Resilience of Critical Infrastructure Investments	Vietnam	✓	✓	✓	
Africa Hydromet Technical Assistance	Zambia	✓	✓	✓	✓

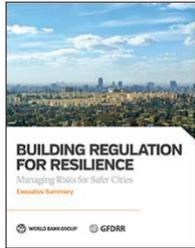
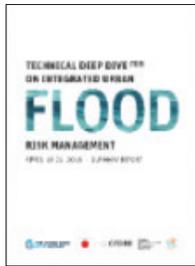
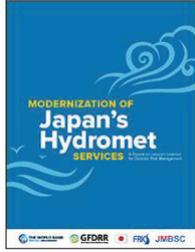
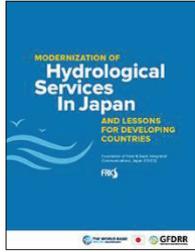
annex 2: DRM hub knowledge products and publications

Focus Area	DRM Hub Program	Publication Title	Type of the Product	Language	Publication
		Making Schools Resilient at Scale: The Case of Japan	Report	English, Japanese	
		Roadmap for Safer School	Guide	English	
Resilient Infrastructure	Safer Schools	Safer Schools: Making Schools Resilient at Scale	Brief	Japanese	

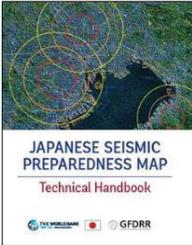
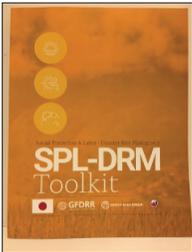
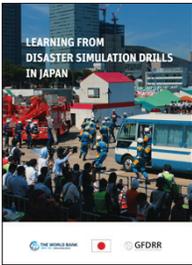
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Focus Area	DRM Hub Program	Publication Title	Type of the Product	Language	Publication
Resilient Infrastructure	Safer Schools	Making Schools Resilient at Scale	Brief	English	
	DRM in Transport	Road Geohazard Risk Management	Brief	English	
Urban Resilience		Building Regulation for Resilience	Brief	English	
	Building Regulation for Resilience	Building Regulation for Resilience Managing Risks for Safer Cities	Brief	English	
		Building Regulation for Resilience Managing Risks for Safer Cities	Report	English	

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Focus Area	DRM Hub Program	Publication Title	Type of the Product	Language	Publication
Urban Resilience		Building Regulation for Resilience Managing Risks for Safer Cities	Executive Summary	English, Japanese	
	Integrated Urban Flood Risk Management	Integrated Urban Flood Risk Management - TDD Summary Report	Report	English	
Science and Technology for Resilience		Modernization of Japan's Hydromet Services	Report	English	
	Hydromet Services	Modernization of Meteorological Services in Japan	Report	English	
		Modernization of Hydrological Services in Japan	Report	English	

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Focus Area	DRM Hub Program	Publication Title	Type of the Product	Language	Publication
Science and Technology for Resilience	Hydromet Services	Hydromet Services	Brief	English, Japanese	
	Seismic Risk Identification and Decision Making	Japanese Seismic Preparedness Map Technical Handbook	Guide	English	
Disaster Risk Governance and Inclusion	Social Risk Management	Social Protection and Labor (SPL) - Disaster Risk Management (DRM) Toolkit	Guide	English	
	Disaster Preparedness and Emergency Management (from Country Program knowledge development)	Learning from Disaster Simulation Drills in Japan	Guide	English	

annex 3: knowledge events and communications highlights

The Hub serves a knowledge center to connect and share Japanese experience and expertise in DRM with development professionals, including at the World Bank, and developing countries. In 2016-17, the Hub engaged DRM communities and other stakeholders through over 50 knowledge exchange events. During the 2016-17 period, the Hub continued to increase the visibility of the Program and these activities through innovative communication tools and outreach. Highlights include:

April 2016

- **1st Technical Deep Dive (TDD) for Integrated Urban Flood Risk Management**

<http://www.worldbank.org/en/events/2016/04/18/drmhubtokyo-technical-deep-dive-on-integrated-urban-flood-risk-management>

- **9th Disaster Risk Management Seminar “Integrated Urban Flood Risk Management: Obstacles and Opportunities in East Asia-Pacific and Lessons from Japan”**

<http://www.worldbank.org/en/events/2016/04/22/integrated-urban-flood-risk-management>

- **10th Disaster Risk Management Seminar “Resilient Reconstruction in Nepal: Transforming Risks to Resilience”**

<http://www.worldbank.org/en/events/2016/04/26/resilient-reconstruction-in-nepal-transforming-risks-to-resilience>

May 2016

- **2016 Understanding Risk Forum:**

In May 2016, the Hub connected and showcased Japanese expertise at Understanding Risk (UR) 2016 ‘Building evidence for Action’ in Venice through its TA and knowledge activities, particularly on “Seismic Risk Identification and Decision-Making”. Six experts from Japanese centers of excellence were invited as panelists in key sessions through the DRM Hub Tokyo to connect with the World Bank experts including Vice President for Sustainable Development, Laura Tuck and Climate Change Senior Director, John Roome.

<http://www.worldbank.org/en/events/2016/05/16/drmhubtokyo-lets-shake-your-community-earthquake-hazard-mapping-approach-for-community-resilience>

June 2016

- **11th Disaster Risk Management Seminar “Risk and Reward: Leveraging Disaster Risk Management for Sustainable Development”**

<http://www.worldbank.org/en/events/2016/06/27/risk-and-reward-leveraging-disaster-risk-management-for-sustainable-development>

- **Feature Story: Technical Support for Afghanistan’s Ministry of Energy and Water**

Eight delegates from Afghanistan’s MEW, including Deputy Minister H.E. Fahimullah Ziaee, visited the DRM Hub, Ministry of Land, Infrastructure, Transport, and Tourism (MLIT), and Japan Water Agency (JWA) as part of the World Bank’s Irrigation Restoration and Development Project (IRDP) (P122235 and P152892) led by Toru Konishi (Senior Economist, World Bank). The team and clients have been working to improve MEW’s capacity to increase resilience to flood events through optimizing technical designs for irrigation facilities under the DRM Hub’s “South Asia: Promotion of Resilient Infrastructure” grant. These outputs will be incorporated under the World Bank-financed investment projects, which funded these knowledge exchange activities in Japan. During the visit, the MEW’s Deputy Minister also participated in JICA’s training program on Yamada-Zeki, a traditional flood-resilient irrigation dam in Fukuoka. The DRM Hub organized and facilitated roundtables between Afghan delegates, MLIT, and JWA to exchange knowledge and expertise on Integrated Water Resources Management (IWRM), including legislation and institutions, as well as operation and maintenance of multi-purpose dams. Related feature story

- **Feature Story: Mainstreaming Risk Reduction in the National Building Code: Protecting Lives and Property from Disaster Risk in the Philippines**

A Country Program grant is helping the Philippines and the World Bank improve the country’s building code. With support of the DRM Hub, the government held a public colloquium to kick off the National Building Code review and revision, and convened national and international experts – particularly from Japan, the US, and Australia - in March. In total, nearly 100 technical experts and representatives attended from the private sector, along with civil society organizations, academics, government officials, and development partners. “I thank the World Bank, the Government of Japan, and GFDRR for their support of the review and revision of the National Building Code, and in particular for the mainstreaming of disaster risk reduction measures into the National Building Code, which is long due for the Philippines. I consider this a very important step to build resilience for the country,” said Rogelio Lazo Singson, Secretary, Department of Public Works and Highways, Government of the Philippines. The full story is available here.

July 2016

- **12th Disaster Risk Management Seminar “Road to Resilience: Managing Geohazards for Less Risky Roads in Developing Countries”**

<http://www.worldbank.org/en/events/2016/07/21/road-to-resilience-managing-geohazards-for-less-risky-roads-in-developing-countries>

- **Workshop on Road Geohazard Risk Management Handbook**

<http://www.worldbank.org/en/events/2016/07/20/drmhubtokyo-workshop-on-road-geohazard-risk-management-handbook>

■ **Blog Post: The World Bank’s Inaugural Innovation Awards**

“Code for Resilience”, an initiative led by DRM Specialist Keiko Saito, who helps lead the DRM Hub’s Knowledge Program on Seismic Risk Identification and Decision-Making, was named a finalist in the World Bank Group’s inaugural Innovation Awards. Code for Resilience participants from across Asia gathered at the Asia Resilience Forum, organized as part of the 3rd UN World Conference on Disaster Reduction and Recovery (WCDRR) in Sendai, Japan.

Link: [Related Blog](#)

■ **Meteo-Tech Expo Japan**

DRM Hub participated in the 2nd Meteo-Tech Expo Japan, held July 20-22, 2016 in Tokyo, organizing a public seminar and exhibition booth. At the seminar, Naho Shibuya, DRM Specialist, introduced the Japan-World Bank Program with a focus on partnership with Japan’s Centers of Excellence including the private sector. Makoto Suwa, Senior DRM Specialist, explained the economic benefits of hydromet modernization, challenges that developing countries face, and the World Bank’s approach to support developing countries in modernization of infrastructure, institutional strengthening, and service delivery. Lastly, he provided an overview of the DRM Hub’s knowledge project on “Review of Japanese Hydrological and Meteorological Services and Lessons for Developing Countries”. The expo, organized by the Japan Management Association with the support of Japan Meteorological Agency and the Ministry of the Environment, welcomed over 32,000 visitors over three days. [Webpage](#)

August 2016

■ **TICAD VI: Strengthening Climate and Disaster Resilience in Sub-Saharan Africa**

Disaster Risk Management Hub, Tokyo’s Africa Hydromet Project “Africa Hydromet Technical Assistance, Capacity Building and Knowledge Exchange Program” Launched at TICAD VI

<http://www.worldbank.org/en/events/2016/08/26/drmhubtokyo-ticad-vi-strengthening-climate-and-disaster-resilience-in-sub-saharan-africa>

■ **Web Story: Expanding Flood Resilience in Ghana**

The Ghana TA project is putting in place a flood forecasting system for the Oti River, and reaching out to communities to ensure that potentially affected people know about and how to use the flood forecasting information produced. The Government counterparts have been benefitting from the training opportunities and knowledge accumulated through the CECAR, and now in a process of expanding the partnership with Kobe and Kyoto Universities for tailor made capacity building program as part of the TA. [Webpage](#)

September 2016

■ **13th Disaster Risk Management Seminar “Preparing for the Next One: Armenia, Kyrgyz Republic, and Tajikistan”**

<http://www.worldbank.org/en/events/2016/09/07/preparing-for-the-next-one-armenia-kyrgyz-republic-and-tajikistan>

■ **Media Coverage: Participation of ECA delegation in the evacuation drill**

The ECA delegation participated in evacuation drill captured at media and newspapers, which include: NHK News, TV Asahi News, Nippon Television News 24, FNN, TV Tokyo, Nagoya Broad Casting Network, Hiroshima Home Television, Nikkei Inc., Yomiuri Shimbun, Sankei Shimbun, Mainichi Newspapers, Hokkaido Shimbun, Chinichi Shimbun

■ **ECA Delegation Visit Featured on Kangaeyo Matchizukuri Blog**

A story about ECA delegation visit was posted on Kangaeyo Matchizukuri blog.

Link: Kangaeyo Matchizukuri blog

■ **Mr. Matsumoto, Vice Minister, Cabinet Office Tweeted the Meeting with ECA Delegation**

ECA government representatives' courtesy visit was tweeted by Mr. Matsumoto, Vice Minister, Cabinet Office.

Link: Mr. Matsumoto's Twitter

■ **Feature Story - Kangaeyo Matchizukuri Blog**

A story about ECA delegation visit was posted on Kangaeyo Matchizukuri blog.

Link: Kangaeyo Matchizukuri blog

■ **Technical Deep Dive on Hydromet Services for Early Warning**

<http://www.worldbank.org/en/events/2016/09/12/drmhubbokyo-technical-deep-dive-on-hydromet-services-for-early-warning>

■ **Report: Hydromet Services**

The report "Modernization of Japan's Hydromet Services: A Report on Lessons Learned for Disaster Risk Management" captures key practices and experience on specific technical subjects of sustainable development used in Japan. Using a three-component framework for large-scale modernization, the report support developing countries seeking to undertake: (i) institutional strengthening; (ii) the modernization of systems; and (iii) enhanced service delivery.

Link: Hydromet Report, Hydrological Service Report, Meteorological Service Report

■ **14th Disaster Risk Management Seminar "Exploring Key Lessons Learned and Opportunities for Improved Forecasting and Early Warning in Developing Countries"**

<http://www.worldbank.org/en/events/2016/09/16/exploring-key-lessons-learned-and-opportunities-for-improved-forecasting-and-early-warning-in-developing-countries>

■ **Blog Post – Related to Early Warnings**

Ko Takuechi, Senior DRM Specialist, World Bank posted this blog, "Are we listening to our ancestors' warnings?" emphasizing that the technological advancement to better understand risks and help communities is commendable but insightful messages from our ancestors can help us better anticipate tomorrow's disaster risks, as in the case of Japan.

<http://blogs.worldbank.org/sustainablecities/are-we-listening-our-ancestors-warnings-disaster-risk-management>

October 2016

■ **Featured video: Six Lessons to Prepare for the Next Disaster: Message from Hyogo Governor Mr. Toshizo Ido**

Speaking at the “Central Asia Earthquake Risk Reduction Forum” held in Almaty, Kazakhstan. Mr. Toshizo Ido, Governor of Hyogo Prefecture shared the six important lessons that Hyogo Prefecture learned after the devastating 1995 Great Hanshin-Awaji Earthquake (also known as the Kobe Earthquake). Not just for high-level policymakers, these six lessons – including how to ensure collaboration mechanisms and how to protect vulnerable people during a disaster - are prescient reminders for all DRM practitioners.

Link: <https://www.youtube.com/watch?v=ZLdgRyjeuEU>

■ **International Symposium on World Tsunami Awareness Day**

The Steering Committee on International Symposium on World Tsunami Awareness Day, in commemoration of November 5, organized “World Tsunami Awareness Day: Towards Resilient Recovery through Gender and Diversity Perspective” with Japan Women’s Network for Disaster Risk Reduction, JICA, the World Bank Tokyo Office, and the DRM Hub, among other partners. The symposium focused on specific cases from Great East Japan Earthquake and Tsunami in 2011, and overseas disaster recovery to deepen the discussion on what does resilient society look like, and what are the key elements that foster such resilience. Margaret Arnold, Senior Social Development Specialist and a Team Leader for the knowledge project, participated in the symposium as panelist.

Link: Symposium

November 2016

■ **Report, Feature Story: Safer schools**

The report, “Making Schools Resilient at Scale: Case of Japan” summarizes Japan’s comprehensive approach, including innovative financial scheme, political and technical solutions, as well as lessons learned that are relevant to countries trying to address similar challenges.

Link: Report, Leaflet, Feature Story

■ **15th Disaster Risk Management Seminar “Making Schools Resilient at Scale”**

<http://www.worldbank.org/en/events/2016/11/02/making-schools-resilient-at-scale>

■ **Report: Seismic Risk Identification and Decision Making**

The report is a step-by-step handbook to assist governments and communities in developing countries prepare for disaster risks, leveraging Japan’s ‘hazard map’ approach. The report summarizes the challenges and possible solutions using risk assessment results.

Link: https://www.gfdrr.org/sites/default/files/publication/121516_drmhubtokyo_Preparedness_Map_for_Community_Resilience_Earthquakes.pdf

■ **16th Disaster Risk Management Seminar “Seismic Preparedness Map for Community Resilience”**

<http://www.worldbank.org/en/events/2016/11/11/seismic-hazard-mapping-for-community-resilience>

■ **Blog Post: Related to Resilient Tourism and Cultural Heritage Project**

Barbara Minguez Garcia, Tourism and Cultural Heritage Specialist, World Bank, posted a blog “Innovating with the Past: How to create resilience through heritage” to showcase knowledge obtained from her participation in the training developed and delivered by Ritsumeikan University and UNESCO experts.

Link: [Blog](#)

■ **Blog Post: Related to Empowering Elders, Women and People with Disabilities for Resilience**

Margaret Arnold, Senior Social Development Specialist, World Bank posted a blog “A tale of two disasters: Communities connecting and learning from each other” after her visit to Japan to advance Ibasho project.

■ **DRM Hub Lecture at the Resilient Cities Summit in Toyama**

<http://www.worldbank.org/en/events/2016/11/02/drmhubtokyo-resilient-cities-summit>

December 2017

■ **17th Disaster Risk Management Seminar “JICA-World Bank Collaboration on Disaster Risk Management: A Focus on South Asia”**

The seminar presented views from JICA and the World Bank on what is needed to make progress on disaster resilience and how collaboration is critical towards that task, specifying cases of on-the-ground collaboration in Bangladesh and Nepal.

<http://www.worldbank.org/en/events/2016/12/09/jica-world-bank-collaboration-on-disaster-risk-management-a-focus-on-south-asia>

■ **DRM Hub, Tokyo joined JICA’s Training on Gender and Diversity for Disaster Resilience**

To close its training course on Gender and Diversity in Disaster Risk Reduction, JICA invited the DRM Hub to speak at the concluding public seminar and provide feedback on its clients’ development action planning. The event brought together officials from Bhutan, Chile, Myanmar, Nepal, Pakistan, and Sri Lanka on how to use Japan’s example of building disaster resilience across gender and society. Link: [Training](#)

■ **Climate Change and Disaster Risk Screening and Management Workshop**

The GFDRR, the DRM Hub and Climate Change Policy team jointly organized a knowledge sharing discussion to harness the expertise of the Japanese technical partners on disaster and climate risk management.

January 2017

■ **Report: Learning from Disaster Simulation Drills in Japan**

The report captures a number of key lessons and good practices from Japan’s experience of designing and executing the disaster simulation drills. The report draws on a host of practices across Japan, including from the prefectures of Hyogo, Shizuoka, and Tokyo

Link: [Report Launch](#)

■ **Resilient Infrastructure – Safer Schools - Roadmap for Safer Schools event**

On January 30-31, 2017, three officials from MEXT are presenting Japan’s school retrofit experience at the event, “A Roadmap for Safer Schools”, in London.

February 2017

■ **Short Knowledge notes - Solutions Brief**

The 4-pager briefs on a) Safer Schools b) Hydromet Services, and c) Road Geohazard Risk Management, draw key lessons from Japan on managing these risks and how the Japanese experience can be applicable to the developing countries.

Road Geohazard Risk Management:

<http://pubdocs.worldbank.org/en/246991486429118858/20170131-Resilient-Roads.pdf>

Hydromet Services:

<http://pubdocs.worldbank.org/en/668641486434579547/20170131-Hydromet-Services.pdf>

Safer Schools:

<http://pubdocs.worldbank.org/en/507671486429119861/20170131-Safer-Schools.pdf>

■ **Quality Infrastructure Conference: DRM for Resilient Infrastructure Session**

The Hub helps share the views of thought-leaders on resilient infrastructure. The Hub hosted a session on QII for Disaster Resilience during the “Second International Conference on Sustainable Development through Quality Infrastructure Investment (QII)” in Tokyo organized by the World Bank and the Government of Japan. Experts on DRM and infrastructure PPPs shared their views on challenges and opportunities for incorporating resilience into an infrastructure project cycle and scaling up investment.

annex 4. financial review

Table 5: Budget Allocations and Commitments to Date⁸ (in US\$ millions)

	Indicative Budget Allocation (Tranche 1-3)	Commitment to Date	Percentage Committed
	(A)	(B)	(B/A)
Country Program	61.0	46.0	75%
AFR – Sub-Saharan Africa	6.5	6.5	100%
EAP – East Asia and the Pacific	17.7	11.0	64%
ECA – Europe and Central Asia	8.9	7.1	81%
LCR – Latin America and the Caribbean	9.3	5.7	62%
MNA – Middle East and North Africa	4.8	2.9	64%
SAR – South Asia	13.8	11.8	86%
Global	1.0	1.0	100%
Knowledge Program	8.0	7.0	88%
Resilient Infrastructure	0.5	2.2	110%
Urban Resilience	0.5	0.6	60%
Science and Technology for Resilience	1.0	1.3	65%
Disaster Risk Governance and Inclusion	0.5	1.3	87%
Hub Program Support	1.5	1.6	107%
Japan's Membership Contribution to GFDRR	3.0	3.0	100%
Program Management and Administration⁹	7.2	7.2	100%
World Bank Fee¹⁰	0.8	0.8	100%
Total	80.0	64.0	80%

⁸ Period from Program Commencement (February 2014) to Date (projected as of February 2017).

⁹ Program Management and Administration funding supports Secretariat activities related to the management of this programmatic trust fund. Activities include: evaluating activity proposals and allocating funds to implementing units; work program planning, monitoring and evaluation; developing and implementing Program-specific management tools, procedures and systems; negotiating the replenishment / expansion of existing programs; program level resource related planning and budgeting; and donor relationship management activities.

¹⁰ The World Bank Fee supports enabling services provided by World Bank central units (e.g. Legal, Human Resources, and Trust Fund Accounting Services). These include: controls as transactions are processed, investing of funds, compliance checks and quality assurance, and accounting and financial reporting. The Fee also covers process-related activities undertaken by managing units and these activities include: issuing trust fund policies, including those addressing cost recovery and fees; clearance of trust fund and partnership proposals; preparation of legal agreements; advisory services; donor relations, including negotiating framework agreements; and trainings.

annex 5: acronyms

Cat DDO	Catastrophe Deferred Drawdown Option
CoP21	2015 United Nations Climate Change Conference aka the 2015 Paris Climate Conference
DFID	United Kingdom Department for International Development
DRFI	Disaster Risk Financing and Insurance
DRM	disaster risk management
EWS	early warning systems
GDP	Gross domestic product
GFDRR	Global Facility for Disaster Reduction and Recovery
GIF	Global Infrastructure Facility
GP	Global Practice
GSURR	Social, Urban, Rural, and Resilience Global Practice
GTIDR	Transport & ICT Global Practice
GWADR	Water Global Practice
ICR	Inclusive Community Resilience
ICT	Information and Communications Technology
JBP	Japan Bosai Platform
JICA	Japan International Cooperation Agency
JMA	Japan Meteorology Agency
JST	Japan Science and Technology Agency
JWA	Japan Water Agency
M&E	Monitoring & evaluation
MDTF	Multi-Donor Trust Fund
MEXT	Ministry of Education, Culture, Sports, Science, and Technology, Japan
MHLW	Ministry of Health, Labour and Welfare, Japan
MIC	Ministry of Internal Affairs and Communications, Japan
MLIT	Ministry of Land, Infrastructure, Transport, and Tourism, Japan
MoF	Ministry of Finance, Japan
NGO	Non-government organization

continues

NMHS	National meteorological and hydrological services
PCRAFI	Pacific Catastrophe Risk Assessment and Financing Initiative
PDNA	Post-disaster needs assessment
PIC	Pacific Island Country
PPIAF	Public-Private Infrastructure Advisory Facility
PREP	Pacific Resilience Program
TA	Technical assistance
TDD	Technical Deep Dive
TDLC	Tokyo Development Learning Center
UN	United Nations
UNDP	United Nations Development Programme
UNISDR	United Nations Office for Disaster Risk Reduction
UR	Understanding Risk
WCDRR	Third UN World Conference on Disaster Risk Reduction
WMO	World Meteorological Organization