Risk Identification at GFDRR

The Global Facility for Disaster Reduction and Recovery enables solutions to improve the availability of relevant natural disaster risk information.

Why Risk Identification Matters

Recognizing, assessing, and understanding risk are the first steps toward reducing the effects of natural hazards and disasters. Many risk assessments are too technical or too broad to answer the questions that decision makers face. By developing information for a purpose, sharing it widely, and communicating it well, policymakers and the public can better understand their disaster risks, prepare for them, and reduce their effects through planning and investment.

Over
160 million
people in 60 countries gained improved access to risk information through GFDRR-supported national and regional geospatial data sharing platforms since 2010.

What We Do

GFDRR supports the development of risk identification tools and methodologies to help government officials, professionals, and communities collaborate on, analyze, communicate, and use risk information effectively.

Facilitating Risk Assessments

GFDRR is sought after for expertise and advice on disaster risk assessments, risk identification, and related tools. Its teams have facilitated developing risk information in more than 60 countries.

Notably, GFDRR secured access to risk analytics for the national and sub-national flood and earthquake risk of 32 Europe and Central Asia countries. It did so substantially below market rate, with analysis undertaken in less than six months. Another example was identifying international engineering expertise for a school safety project in Armenia. These experts were not only experienced but also were Armenia expatriates who could fully appreciate the cultural background and were conversant in the local languages – critical for training local engineers. In the Africa region, GFDRR is leading the risk assessment component of a project in the Indian Ocean Islands, providing technical assistance to vulnerable countries and plans to scale up this to other regions.

Advancing Open Data for Resilience

The Open Data for Resilience Initiative (OpenDRI) applies the global open data movement concept to the challenge of reducing vulnerability to the impacts of natural hazards and climate change. For over four years, OpenDRI has supported disaster risk management (DRM) teams to build the capacity and long-term ownership of open data projects with countries that are tailored to meet specific needs and the goals of stakeholders.

OpenDRI has created a suite of complementary programs, including open data platforms, community mapping and crowdsourcing, and risk visualization and communication. It has also released a number of publications to enable the scalability of these programs.

Advancing the Understanding of Risk

GFDRR recognized the need for a community of risk identification professionals to share knowledge, promote best practices, and form nontraditional partnerships. To meet this need, in 2010 GFDRR established Understanding Risk (UR), which has since become the preeminent platform for collaboration, knowledge sharing, and innovation in identifying and assessing disaster risk. An open global community, it has grown to over 3,300 members from more than 125 countries representing government agencies, the private sector, multilateral organizations, NGOs, research institutions, academia, and civil society.

UR Forums convene every two years and showcase best practices and the latest technical know-how in disaster risk assessments, providing organizations and individuals an opportunity to highlight new activities and initiatives, build new partnerships, and foster advances in the field. In 2014, almost 1,000 risk assessment experts and practitioners gathered in London for UR's third forum under the theme, "Producing Actionable Information." The next forum will be held in Istanbul, Turkey in May 2016.

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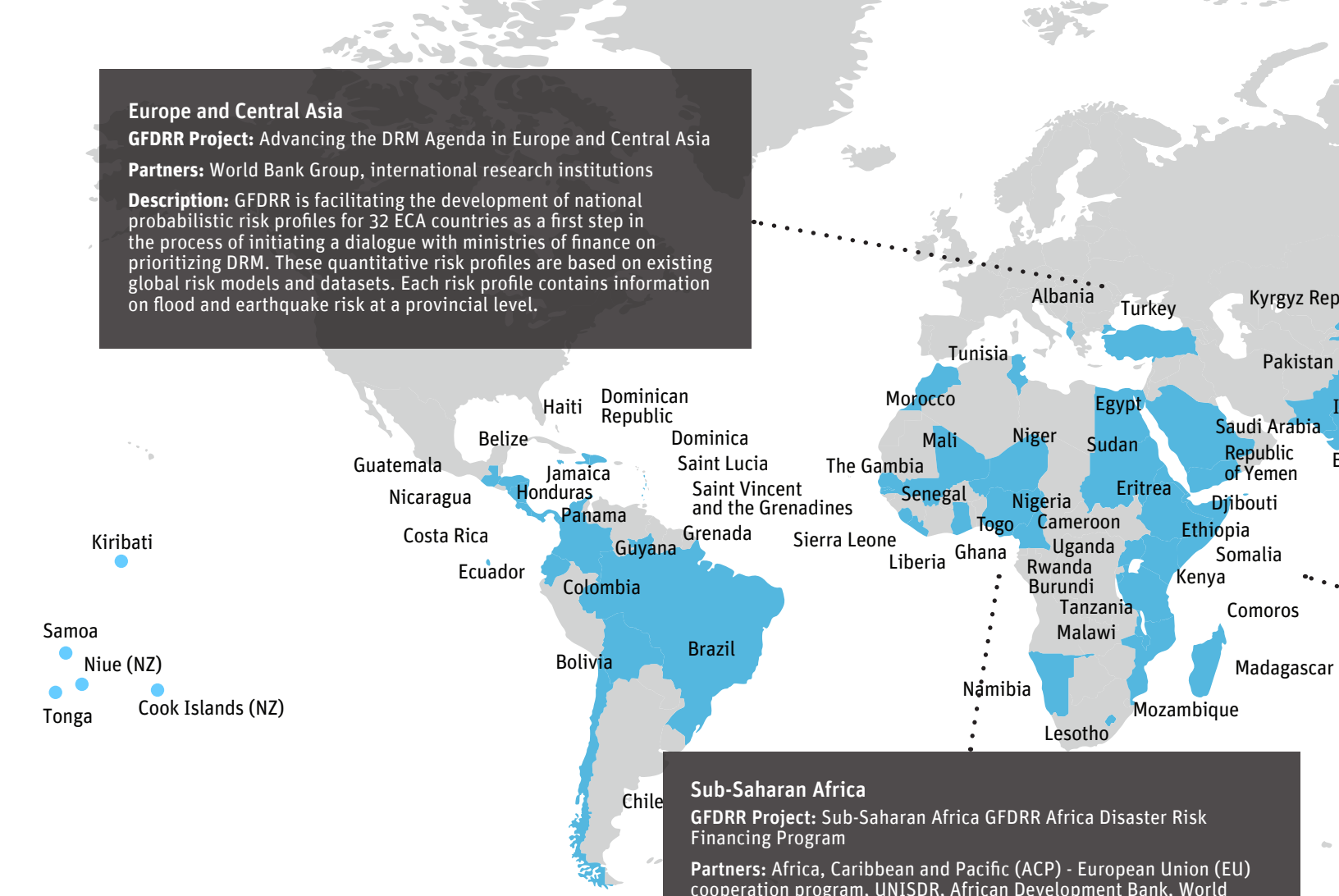


Europe and Central Asia

GFDRR Project: Advancing the DRM Agenda in Europe and Central Asia

Partners: World Bank Group, international research institutions

Description: GFDRR is facilitating the development of national probabilistic risk profiles for 32 ECA countries as a first step in the process of initiating a dialogue with ministries of finance on prioritizing DRM. These quantitative risk profiles are based on existing global risk models and datasets. Each risk profile contains information on flood and earthquake risk at a provincial level.

Sub-Saharan Africa

GFDRR Project: Sub-Saharan Africa GFDRR Africa Disaster Risk Financing Program

Partners: Africa, Caribbean and Pacific (ACP) - European Union (EU) cooperation program, UNISDR, African Development Bank, World Bank Group

Description: Under the ACP-EU program, GFDRR is implementing disaster risk financing programs throughout the region. Steps include creating an enabling data environment through OpenDRI programs, implementing demand-driven in-depth risk assessments to be communicated through shorter risk profiles, and disseminating information and capacity building throughout the region. This includes through the Southwest Indian Ocean Risk Assessment and Financing Initiative (SWIO RAFI), which since FY2015 has collected, developed, and shared risk information for five Indian Ocean Islands - Comoros, Madagascar, Mauritius, Seychelles, and Zanzibar - to improve understanding and availability of disaster risk financing solutions, such as insurance or contingent credit.

GFDRR Risk Identification Engagement

Risk Identification Supports Work Across GFDRR's Pillars

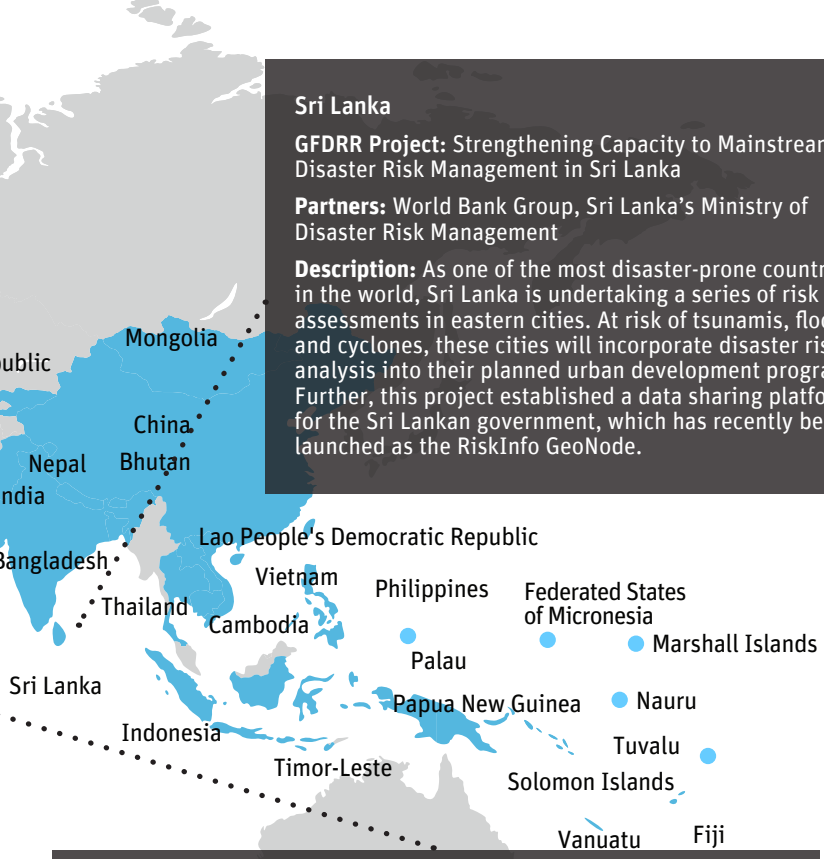
Pillar 1 – Risk Identification: People in vulnerable countries will have improved access to information about disaster and climate risks, and greater capacity to create, manage, and use this information.

Pillar 2 – Risk Reduction: Risk identification supports decision makers in vulnerable countries to avoid creating new risks and to reduce current risks through smart investments.

Pillar 3 – Preparedness: Hazard and risk information enables decision makers to understand potential disaster impacts through dynamic scenario analysis.

Pillar 4 – Financial Protection: Risk information is a critical component in the development of robust financial protection strategies.

Pillar 5 – Resilient Recovery: Risk identification can improve post-disaster reconstruction and recovery efforts by rapidly assessing damage and providing information to guide resilient recovery.



Sri Lanka

GFDRR Project: Strengthening Capacity to Mainstream Disaster Risk Management in Sri Lanka

Partners: World Bank Group, Sri Lanka's Ministry of Disaster Risk Management

Description: As one of the most disaster-prone countries in the world, Sri Lanka is undertaking a series of risk assessments in eastern cities. At risk of tsunamis, floods and cyclones, these cities will incorporate disaster risk analysis into their planned urban development programs. Further, this project established a data sharing platform for the Sri Lankan government, which has recently been launched as the RiskInfo GeoNode.

The Philippines

GFDRR Project: Assessment Results in the Manila Master Flood Plan

Partners: The World Bank, Government of the Philippines

Description: Manila is exposed to frequent flooding, including the 2009 typhoons that put most of the city underwater. After economic losses totaling $4.4 billion or 2.7% of the country's GDP, GFDRR and the World Bank assisted the government in preparing an integrated flood management master plan based on flood hazard mapping.

In 2012, the government formally endorsed an $8.6 billion investment plan to better protect Manila's population and economic assets from flood risk—planning to leverage funding from the World Bank and other sources. The government has begun dredging water ways and modernizing pumping stations. It also is planning longer-term investments, including a dam in the upper catchment of Marikina city, northeast of Manila, and improvements in the area's river systems.

Supporting Ex-post Disaster Assessments

The Spatial Impact Assessment (SIA) team uses risk information, including satellite imagery and local spatial datasets, to evaluate the extent of a disaster's damage and to facilitate developing a financial estimate for recovery. This work supports GFDRR's Resilient Recovery efforts by providing both information before a damage assessment is undertaken and independent validation.

In FY2015, SIA was mobilized following the April and May earthquakes in Nepal. This work has also been applied to support GFDRR's post-conflict assessments, such as the impact of the crisis situation in Syria, as well as to better understand pandemics, such as through the Ebola GeoNode.

Snapshot: Leveraging in Practice

Indonesia: Officials in Jakarta wanted to create flood risk contingency plans, but lacked data. In 2011, the Indonesian government, working with the Australian government and GFDRR, partnered with the Humanitarian OpenStreetMap Team to train over 500 Indonesians through local governments, civil society organizations, and universities. Together, they mapped over 250,000 buildings. Indonesia's geospatial information agency and academic experts at Gadjah Mada University have helped scale up the program, mapping over one million buildings to date.

Building on this, GFDRR, the Indonesian government, the Australia-Indonesia Facility for Disaster Reduction, the East Asia AusAID Infrastructure for Growth Trust Fund, and the World Bank partnered to create the Indonesian Scenario Assessment for Emergencies (InaSAFE). This free, open-source software, produces realistic natural hazard impact scenarios for better planning, preparedness, and response. Countries are increasingly requesting to develop initiatives similar to InaSAFE, which now features the ability to provide flood impact analysis and earthquake fatality predictions.

Pacific: PCRAFI—a joint initiative of the World Bank, the Asian Development Bank, and SOPAC/SPC, with funding support from GFDRR and the government of Japan—has helped member countries in the Pacific access and manage detailed risk information, allowing them to implement financial protection solutions. ADD: The related geospatial information is stored on one of the biggest GeoNodes in the world, with nearly 500 datasets for 15 countries in the Pacific.

As a result of the insurance pilot, six countries in the Pacific Islands secured $67 million of earthquake, tsunami, and tropical cyclone risk insurance coverage in 2013. In January 2014, one of the countries, Tonga received an immediate disbursement of $1.27 million that provided critical instantaneous financing toward recovery from Cyclone Ian, becoming the first country to benefit from a pay-out. Additionally, following the devastating Tropical Cyclone Pam in March 2015, Vanuatu received a PCRAFI pilot program payout of $1.9 million within 10 days of the disaster, ensuring funds would be available for immediate post-disaster needs.

Highlights

GFDRR, working with local and international partners, supports programs that improve access to information about disaster and climate risks, as well as increase capacity to create, manage, and use this information.

Nepal

GFDRR launched the Open Cities Kathmandu project in 2012. The project used community mapping techniques to produce a complete survey of schools and health facilities in the Kathmandu Valley. In total, over 2,250 schools and 350 health facilities were mapped throughout the Valley.

The project also supported the creation of a local NGO, Kathmandu Living Labs (KLL), comprised of participants in the first phase of the project in order to continue mapping activities in Nepal.

When the earthquake struck in April 2015 in Nepal, the KLL team gathered at a makeshift facility (their building was damaged) to begin mapping affected areas. In the following weeks, over 7,000 volunteers from all over the world, coordinated by KLL, mapped the earthquake-hit zones using the OpenStreetMap platform. The maps they created were widely used by the Government of Nepal and international organizations during the earthquake response and recovery activities.

Creation of Risk Profiles: Europe and Central Asia

At the request of the World Bank Disaster Risk Management operational team, GFDRR led the creation of flood and earthquake risk assessments for all countries in Europe and Central Asia. These flood and earthquake risk assessments model the disaster risk under current conditions and account for changes in socio-economic and climatic scenarios.

GFDRR has distilled these technical risk assessments into 4-page country risk profiles, which are meant to communicate disaster risk in a way that is

GFDRR has helped make

more than 1,300 natural hazard risk datasets

freely available through geospatial data sharing platforms.

Advancing Risk Identification Knowledge

GFDRR brings together civil society organizations, governments, and development partners and serves as a knowledge hub for the disaster risk information community:

- **Planning an Open Cities Mapping Project:** Stakeholder and volunteer-supported community mapping activities help advance information about a specific area for use in risk assessments, planning, preparedness, and response initiatives. GFDRR's efforts on community mapping projects and other open data initiatives, through OpenDRI, provided the impetus for a new partnership, Open Cities. This project aims to catalyze the creation, management, and use of open data to produce innovative solutions for urban planning and resilience challenges across South Asia. A publication documenting the design and implementation of Open Cities mapping projects was released in October 2014 and provides a framework for facilitating community mapping activities.
- **Code for Resilience:** Bridging communities for disaster resilience, Code for Resilience (CfR), a multi-year global initiative working with wide-ranging global partners from the public, private, community, and civic tech sector, aims to build the resilience of communities to natural disasters through innovative uses of information and communication technologies.

  Building on momentum established in FY2014, in FY2015 CfR introduced fellowship opportunities to engage talented technologists in building tools, communities, and capacity to improve the resilience of communities to disasters. These fellowships will promote the use of open data and open source software to collect, analyze, share, and improve risk data for better decision-making.

  In addition, CfR has also enabled code sprints in Indonesia, Haiti, Sri Lanka, Tanzania, and Togo that helped foster community disaster resilience, as well as an Asia Resilience Forum in partnership with the Japan Foundation and the World Bank. This forum, hosted during the third UN World Conference on Disaster Risk Reduction, brought together over 150 technologists from the region who engaged in developing civic apps for community based disaster resilience.

understandable and provides context. The DRM operational team aims to bring these risk profiles to client countries to better help them understand their disaster risk.

The Challenge Fund

Over the past decade, there has been marked improvement in the availability and accessibility of risk information. However, many of the poorest and most vulnerable countries have been left behind. The demand for more accessible, high-resolution, and trusted risk data and analyses is rising, with emerging technologies providing an unparalleled opportunity to make this possible.

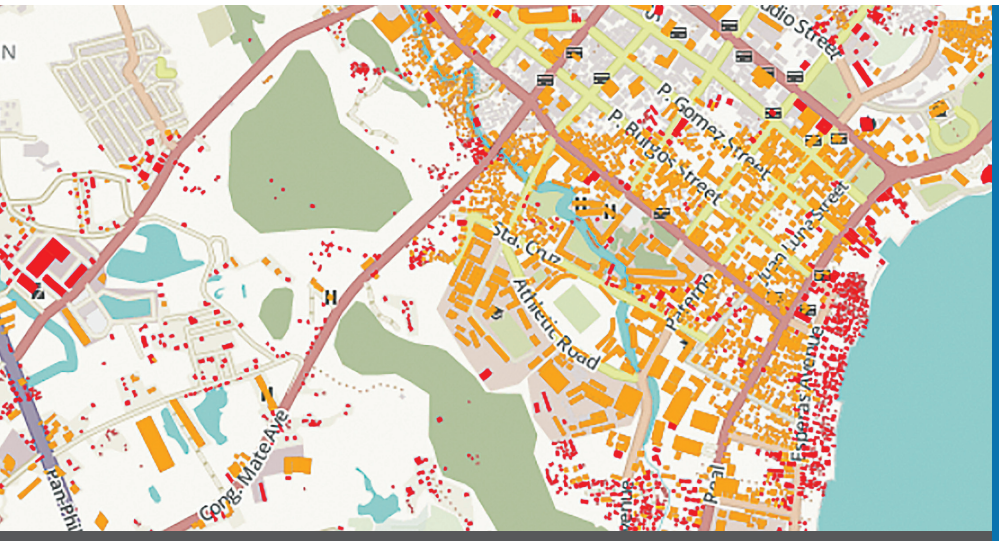
Launched in March 2015 at WCDRR, the UK Department for International Development and GFDRR's competitive Challenge Fund provided small grants of $25,000-$100,000 to projects that address the challenge of bridging the gap between technology and on-the-ground user needs in the field of disaster risk identification. Winners of Phase 1 grants will be announced in late 2015. Phase 2 funding is set to take place in FY2016

Probabilistic Risk Assessment (CAPRA)

GFDRR supports CAPRA, an innovative disaster risk analysis system that uses geographic data and probability techniques so that users can quantify and visualize risk from earthquakes, tsunamis, hurricanes, floods, landslides, and volcanoes in the Latin America and Caribbean region. In many GFDRR projects, local experts are trained in the use of CAPRA to design risk mitigation measures, assess different investment options, support contingency planning, and evaluate risk financing strategies.

In El Salvador, GFDRR used CAPRA to help the government conduct a seismic risk analysis for the health, education, and public sector building portfolios in the metropolitan area of San Salvador to better inform the government's investment decisions in risk reduction. Similar collaboration is underway with the governments of Belize, Costa Rica, and Honduras.

Starting with GFDRR seed funding in Nicaragua in 2008, the initiative has grown into a partnership among the World Bank, the Inter-American Development Bank, the United Nations Office for Disaster Risk Reduction (UNISDR), Central America's regional coordination body for disaster prevention (CEPREDENAC), and the governments of Belize, Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua.



GFDRR, the American Red Cross, and the Humanitarian OpenStreetMap Team (HOT) mobilized community mapping to guide reconstruction in the Philippines after Typhoon Yolanda.

Community-Based Mapping Results

Nepal mapped 2,256 schools and 350 health facilities with participation from over 2,300 individuals.

Sri Lanka mapped over 30,000 buildings and 450 km of roads.

Bangladesh mapped 8,500 buildings, and roads and drainage works totaling 93 km.

Malawi mapped 20,900 buildings, and 400 residential areas.

Lessons Learned

Clearly define the purpose of a risk assessment before analysis starts.

Without a clearly defined purpose and end-user, a risk assessment may become a scientific and engineering exercise without a readily identifiable application. Moreover, a risk assessment that is not properly targeted may not effectively address its intended purpose, or may become over-engineered and over-resourced. Where risk assessments have been commissioned in response to a clear and specific request for information, they have been effective in reducing fiscal or physical risk.

Promote and enable ownership of the risk assessment process and efforts to mitigate risk.

Experience shows that successful projects often partner risk specialists with country counterparts to design, implement, and communicate the results of the risk assessment. In Indonesia, the development team created InaSAFE in close collaboration with Jakarta government officials, increasing its impact and sustainability, as well as driving demand for similar tools globally.

Build credibility with a rigorous and transparent approach that articulates uncertainty.

Risk information that lacks a rigorous scientific approach or produces erroneous results can result in poor investment decisions, and damage the credibility of government officials and disaster risk experts. For example, several studies judged Haiti to have low seismic risk—an assessment tragically contradicted by the January 2010 earthquake.

Cultivate and promote generating and using open data.

The analysis of natural hazards and their risks is a highly resource- and data-intensive process, whereby the return on expended resources (time and money) can be maximized if the data are created once and used often, and if they are iteratively improved. In Nepal, for example, the government had received risk information in the form of paper reports several times, without receiving the input data or final results in a digital format that is accessible for later use and development. GFDRR's strategy aims to reduce these missed opportunities.

Prioritize communicating of risk information.

Clear communication throughout the risk assessment process—from initiation of the assessment to delivery of results and the development of plans in response—is critical for successfully mitigating disaster risk. For example, an exceptionally planned and implemented "Build Back Better" campaign led by the government of Indonesia in the aftermath of the 2009 Padang earthquake demonstrated conclusively that well-targeted education and communication of risk information can increase awareness of natural hazards and their potential impacts.

"InaSAFE tools improve disaster preparedness in Indonesia by providing a new way to combine scientific hazard information and community knowledge on disaster risk."

—Dody Ruswandi, Deputy for Disaster Reduction and Preparedness, Indonesia's National Agency for Disaster

Strategic Partners

Our Partners in-country:

National, provincial, district, and city disaster management authorities

Ministries of finance

Departments of public works and highways

National development and planning departments

Water resources, agriculture, surveys, geology/ geospatial and remote sensing agencies, and national statistics offices

Our Partners

GFDRR works with a wide variety of partners, including:


African Development Bank


Ambiental


American Red Cross


Asian Development Bank


Government of Australia


BBC Media Action


Boundless


British Geological Survey


Centre for Numerical Methods in Engineering


Climate Central


Deltares


Development Seed


EigenRisk


Evaluacion de Riesgos Naturales—America Latina


EIT Climate-KIC


EU-JRC


European Space Agency


Executive Office of the President, US Government


Food and Agriculture Organization of the United Nations


French Geological Survey (BRGM)


Geoscience Australia


Global Earthquake Model


Google


Humanitarian OpenStreetMap Team


Indonesia National Disaster Management Agency


Indonesian Institute of Sciences


Inter-American Development Bank


International Federation of Red Cross and Red Crescent Societies


Italian Space Agency


ITHACA


Japan Aerospace Exploration Agency


Japan International Cooperation Agency


Karen Clark and Company


Kenya Red Cross


King's College London


KIT


MapAction


Massachusetts Institute of Technology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NCAR


NIWA


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Red Cross Red Crescent Climate Centre


Research Councils UK


Rockefeller Foundation


Secretariat of the Pacific Community—Applied Geoscience and Technology Division


Skoll Foundation


Stanford University


Swiss Re


The Technical Consortium for Resilience in the Horn of Africa (Hosted by ILRI and supported by USAID)


UBA Trust


UCLA


UK Department for International Development


USAID


US State Department

U.S. State Department, Humanitarian Information Unit


University at Buffalo


University of Liverpool


University of the West Indies


UNICEF


UNISDR


UNDP- Bureau for Crisis Prevention and Recovery


Free University of Amsterdam


World Food Programme


Willis Re


Willis Research Network


World Meteorological Organization

NOTES

GFDRR'S Fiscal Year 2014-15 (FY15) covers work during July 1, 2014 – June 30, 2015.
All monetary amounts are in US dollars unless otherwise indicated.

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Global Facility for Disaster Reduction and Recovery

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GFDRR PILLAR: Risk Identification

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