




OPEN ACCESS TO RISK INFORMATION

Unlocking data, communicating risk

GFDRR's Innovation Lab team harnesses technology and science to quantify disaster and climate risks. With diverse challenges from country to country, the Innovation Lab specializes in clearly defining a problem, building tailored solutions with strategic partners, and avoiding “cookie cutter” approaches. The aim is building resilience before disaster strikes, largely by leveraging open data and open source tools.

WHAT WE DO

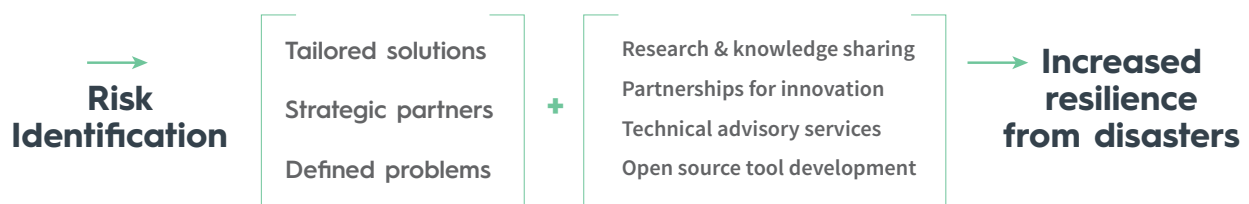
-  The GFDRR Innovation Lab is a small team of experts using cutting-edge science and technology to make high-quality risk information available faster and at lower costs.
-  The initiative is responsive to the questions and needs of decision-makers and communities, developing new tools that allow them to collect, share, and understand risk information.
-  The Innovation Lab tailors its approach to support the full range of disaster risk management interventions—from preparedness to risk reduction to consideration of financial solutions.

1,500+

the number of geospatial datasets on more than 30 countries the Lab has helped make freely available using open geospatial platforms

2021

the year that GFDRR aims to make disaster risk information openly accessible at the district level in all its countries of engagement



OUR APPROACH

Open Source Tool Development

Open and accessible risk information is the foundation for effective disaster risk management. The Innovation Lab creates tools to promote wide access to vital data and information.

- » The Open Data for Resilience Initiative (OpenDRI) encourages governments to make official data available to the public — and supports local communities to play a greater role in risk management through projects like community mapping — all through the use of open source tools.
- » Programs like Code for Resilience foster the development of new solutions to meet identified needs and connect developers with policy-makers.
- » SMS Rain is an app, developed by computer science students in Haiti, which helps the government collect and analyze rainfall patterns.

Technical Advisory Services

The program helps to ensure decision-makers, from the local to the international level, are taking advantage of new approaches and technology in order to deliver risk information to more people faster, cheaper, and with greater

functionality. The Innovation Lab also collaborates closely with other GFDRR initiatives, such as the financial protection and hydromet teams, to advance the use of risk information.

- » National-level risk profiles have been developed and rolled out in Africa, Central Asia, South Asia, and Europe.
- » In Sub-Saharan Africa, risk assessments and profiles are underway for nine countries, with an additional five in the Southwest Indian Ocean Islands already launched.
- » These risk assessments provide valuable information on the risks from earthquake, flood, drought, volcano, and landslides to aid decision-makers in better understanding their risk to support sustainable development.

Research and Knowledge Sharing

Population growth, rapid urbanization, and climate change are quickly making existing risk information obsolete, and the pace of innovation moves rapidly. The Innovation Lab prioritizes making new methods of disaster risk assessment available and increasing understanding for other stakeholders—including best practice publications and analysis.

The “Making of a Riskier Future” publication, released in May

2016, makes the case for all risk assessments to consider how climate and socio-economic changes will shape and grow risk in the future. This research informs future interventions (See box).

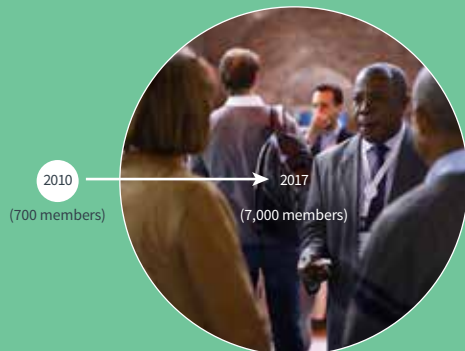
Partnerships for Innovation

The initiative works with a wide variety of partners at both the local and multinational level to bring the most innovative and custom-made solutions to countries around the world, each with different needs and priorities. Key partners include producers and users of risk data, such as national governments and local communities. Through these ecosystems, the initiative shares knowledge, fosters connection, and encourages collaboration. It also works closely with other development partners, including UN agencies, NGOs, technology companies, insurers, and academic institutions.

- » The Understanding Risk community (pg. 3) is an important focal point for partnerships.
- » The Challenge Fund, a joint project with the UK government, awards grants for disruptive ideas that can overcome entrenched barriers to understanding risk. Through the Fund, new methods such as open-source mobile weather stations, drones, crowdsourcing, social media, and satellite imagery are being applied.

UNDERSTANDING RISK

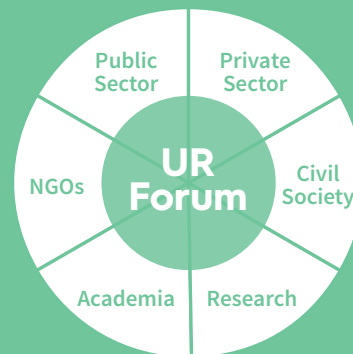
In 2010, the Understanding Risk (UR) Community was founded with a membership of 700. Today, it has grown to become a global movement of more than 7,000.



Managed by GFDRR, the UR Community is open to anyone passionate about, and active in, the creation, communication, and use of risk identification.

The UR Community brings together experts and practitioners from around the world and across sectors, all contributing unique backgrounds and experiences. Together, this diverse group of people collaborate, share knowledge and best practices, and discuss innovative solutions for assessing and communicating risk.

Every two years, the global UR Forum brings together thought leaders and experts from the public, academic, and private sectors.



A 2017 evaluation of the UR Community underscored the positive impact of the Forums and the support of the community. One-hundred percent of respondents said their participation in the UR community resulted in an improved understanding of disaster risk, 90 percent credited UR events with helping to form new partnerships, and 80 percent reported applying risk assessment technology discovered at the UR events at the country level.

The five-day event featured high-level panel discussions and remarks from, among others, Laura Tuck, the World Bank's Vice President for Sustainable Development, and Sheryl Sandberg, the COO of Facebook. Live technology presentations included a demonstration of how to build a mobile weather station, as well as a showcase of IBM Watson, the artificially intelligent "supercomputer." With attendees from governments, NGOs and the private sector, some 2,000 bilateral meetings were held during the Forum, proving it to be a valuable networking opportunity.

The most recent UR Forum brought together more than 650 attendees from 100+ countries and 350 institutions.

UR Understanding Risk



Challenge Fund



Code for Resilience



Open Data for Resilience Initiative

ThinkHazard!

ACTIVE ENGAGEMENTS

ENGAGEMENT LEVEL

- \$1,000,000 and less
- \$1,000,100-\$1,500,000
- \$1,500,100+



Measuring Impact:

GFDRR funded the **GeoNode**, the world's predominant open-source geospatial platform, which is used by more than 20 private companies around the world. Beginning with an initial GFDRR investment of \$1 million, partners subsequently provided an additional \$2 million over the past five years. GFDRR's investment helped countries save funds that would otherwise have been spent on gaining access to a proprietary platform.



The **OpenDRI** program has been active in more than 60 countries since its inception in 2012. In Bangladesh, for example, it has mapped more than 8,500 buildings, 93 kilometers of roads, and 50 kilometers of drainage works.

Research to Create Momentum for Action

The Innovation Lab is changing the way policy-makers, disaster risk practitioners, and communities think about risk. “The Making of a Riskier Future” report released earlier this year showed that most disaster risk assessments today are static. In addition, they are overly focused on understanding current risks, not fully taking into account how factors like rapid urbanization, population growth, and climate change are rapidly increasing future risk.

- » It is expected that by 2050, more than 3 million square kilometers globally—the size of India—will be urbanized. This represents a five-fold increase from 2000.
- » As a result of population growth and urbanization, predictions suggest 1.3 billion people and \$158 trillion in assets will be at risk from river and coastal floods by 2050.

The world’s most densely populated cities are sinking fast, increasing river and coastal flooding. In most cases, this is happening at a rate that far exceeds sea level rise and, as a result, increases the potential for intense impacts from disasters. Without adaptation, annual losses in 136 coastal cities are expected to increase to \$1 trillion by 2070.

The “Making of a Riskier Future” report argues that these drivers of future risk are within the control of decision-makers, giving them the opportunity to make smart investments today and manage the risks of tomorrow.

Flood risks in Indonesia are expected to increase significantly if current urbanization trends continue over the next 30 years.

\$1 trillion

expected cost of flooding by 2070 without adaptation.



+166%

increased flood risk in Indonesia

+455%

increased coastal flood risk in Indonesia



ThinkHazard!

ThinkHazard! is a first-of-its-kind, free, open-source tool providing information on 11 hazards across 196 countries. It is intended to put information in the hands of those who need it most across all levels; both non-technical users and experts are able to use it. In 2017, the platform was updated with information on three additional hazards—wildfire, urban flood, and extreme heat—and made fully accessible on mobile technology.

Since its launch, the tool has been used by nearly 30,000 people from more than 198 countries.

ThinkHazard! was developed in collaboration with a wide range of partners from the private, academic, and multi-lateral sectors. Partners provided assistance on tool development, expert advice and, increasingly, through the provision of more accurate and high-resolution hazard data.

- » FIRST-OF-ITS-KIND, FREE, OPEN-SOURCE TOOL
- » INFO ON 11 HAZARDS ACROSS 196 COUNTRIES
- » 16,500+ AVERAGE PAGE VIEWS A MONTH
- » VISITORS FROM 198 DIFFERENT COUNTRIES



STORIES



Sri Lanka

The Sri Lankan city of Batticaloa, with a population of 90,000, is located in a region prone to droughts, floods, tsunami, and cyclones. In 2004, it was left stricken by the Indian Ocean tsunami. Despite its status as a commercial hub, the city was poorly mapped, with no digital geographic data. This made risk contingency planning extremely challenging, with no way to calculate how many schools, hospitals, or roads would be affected by different disasters.

Under OpenDRI program, the Innovation Lab worked with the government to map all buildings and roads in the city. The project, with guidance from GFDRR, chose OpenStreetMap as the central gathering point for data and launched training programs on the technology. A small group began tracing building outlines into OpenStreetMap from satellite imagery. Dozens of recent university graduates were mobilized to travel across the city, digitally mapping the area.

These activities were carried out in conjunction with key partners, including the national and local governments, as well as the major Sri Lankan universities.

This was a vital resource in 2016, when, during torrential rains, flooding and landslides threatened the population.

Capitalizing on the success of the Batticaloan model, the Sri Lankan government is now in the process of scaling up, with an investment of \$210 million in climate and disaster resilience.

30,000
buildings

number of structures data was collected on, all of which is freely available on OpenStreetMap for use in disaster risk management.

“The worst flood was in 2010 and was a very big one. It affected me physically and mentally. Now we have enough data regarding the floods so we can predict the future. Now we are not afraid because we know the area. I’m really happy and proud to work in this kind of project.”

—Saiuri Jeyakodi, Community mapper, Attanagalu Oya, Sri Lanka



GFDRR Engagement Notes

Open Access to Risk Information

gfdrr.org/innovation-lab

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The Global Facility for Disaster Reduction and Recovery (GFDRR) is a global partnership that helps developing countries better understand and reduce their vulnerability to natural hazards and climate change.

GFDRR is a grant-funding mechanism, managed by the World Bank, that supports disaster risk management projects worldwide.

Working on the ground with over 400 local, national, regional, and international partners, GFDRR provides knowledge, funding, and technical assistance.