



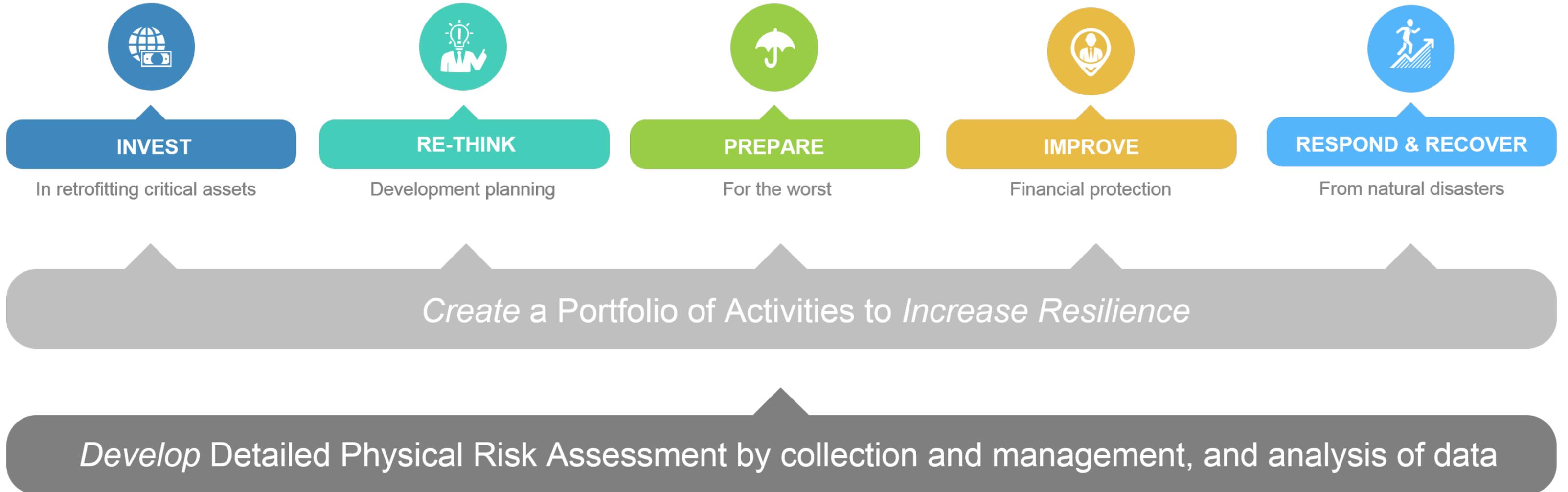
GFDRR Innovation Lab Open Data for Resilience Initiative

Alanna Simpson, Vivien Deparday, Keiko Saito

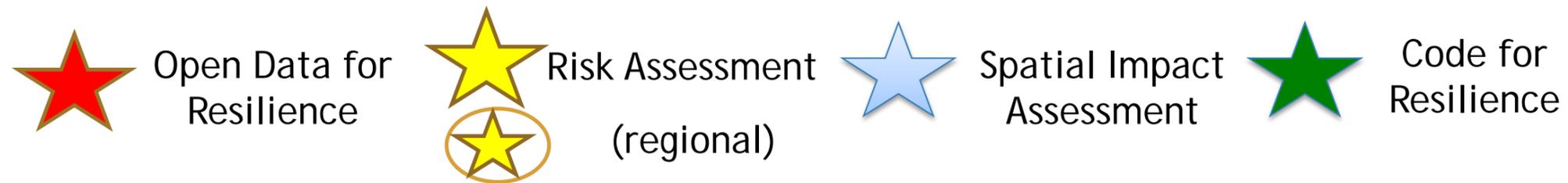
September 4, 2016

Developing Risk Information to Inform Decisions

Create a platform to inform resilient development across sectors



Innovation Labs – a global perspective

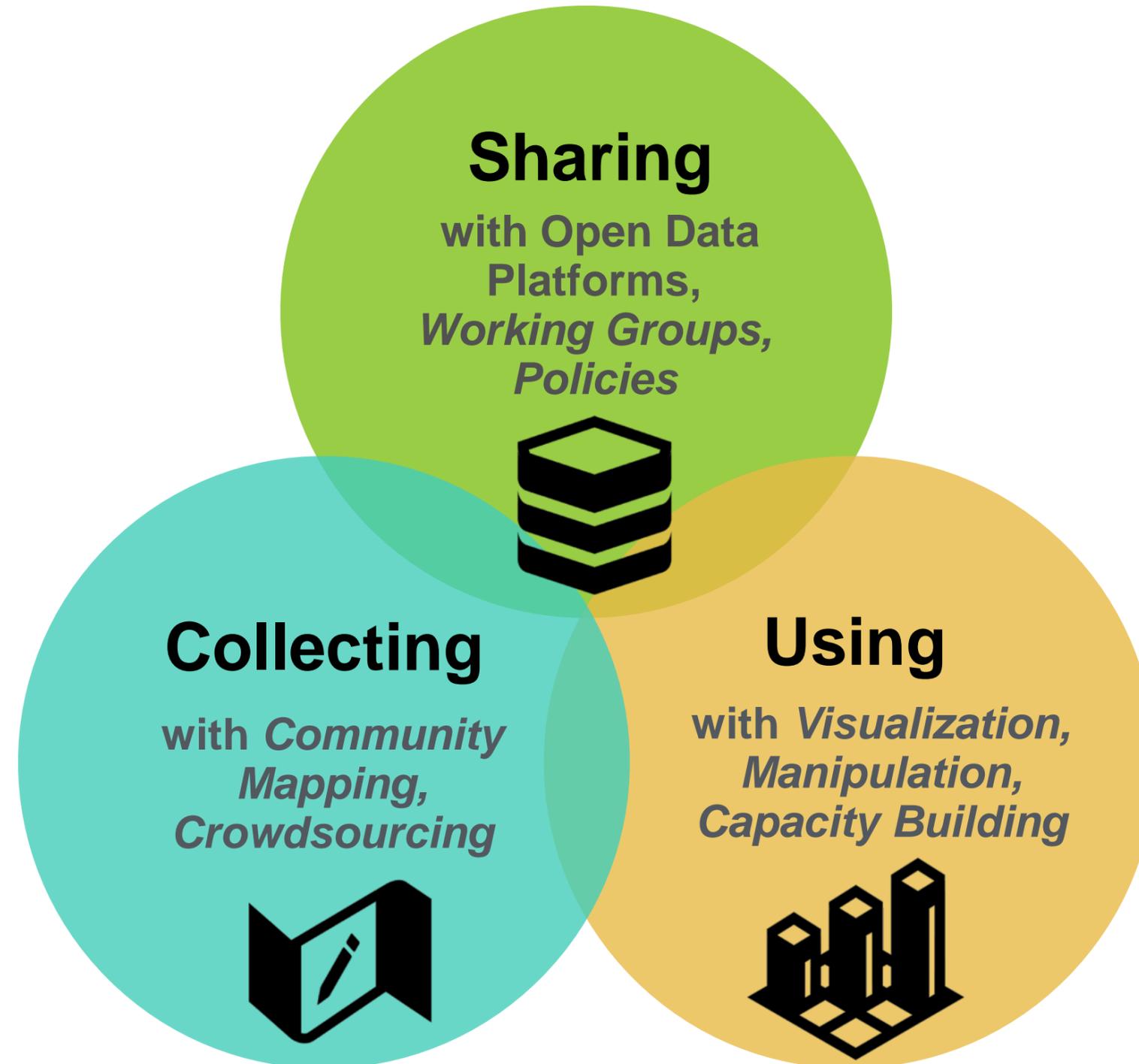


The Problem

- Understanding and quantifying disaster and climate risks requires accessible, detailed and up to date data on the hazard, exposure and vulnerability
- In developing countries, data gaps prohibit meaningful analysis of risks – for example:
 - Impact of Sea Level Rise when current coastal dataset has a ~16 m vertical error
 - Impact of disasters and climate change on vulnerable populations when census data is not disaggregated
 - Impact of disasters on schools when there is no database of schools and their attributes
- The data issues:
 - Fragmentation and duplication across ministries and development institutions
 - Discoverability and inaccessibility
 - Stale and incomplete data
 - Curation expense
 - Weak Usage/Application creates a disincentive for investment in data

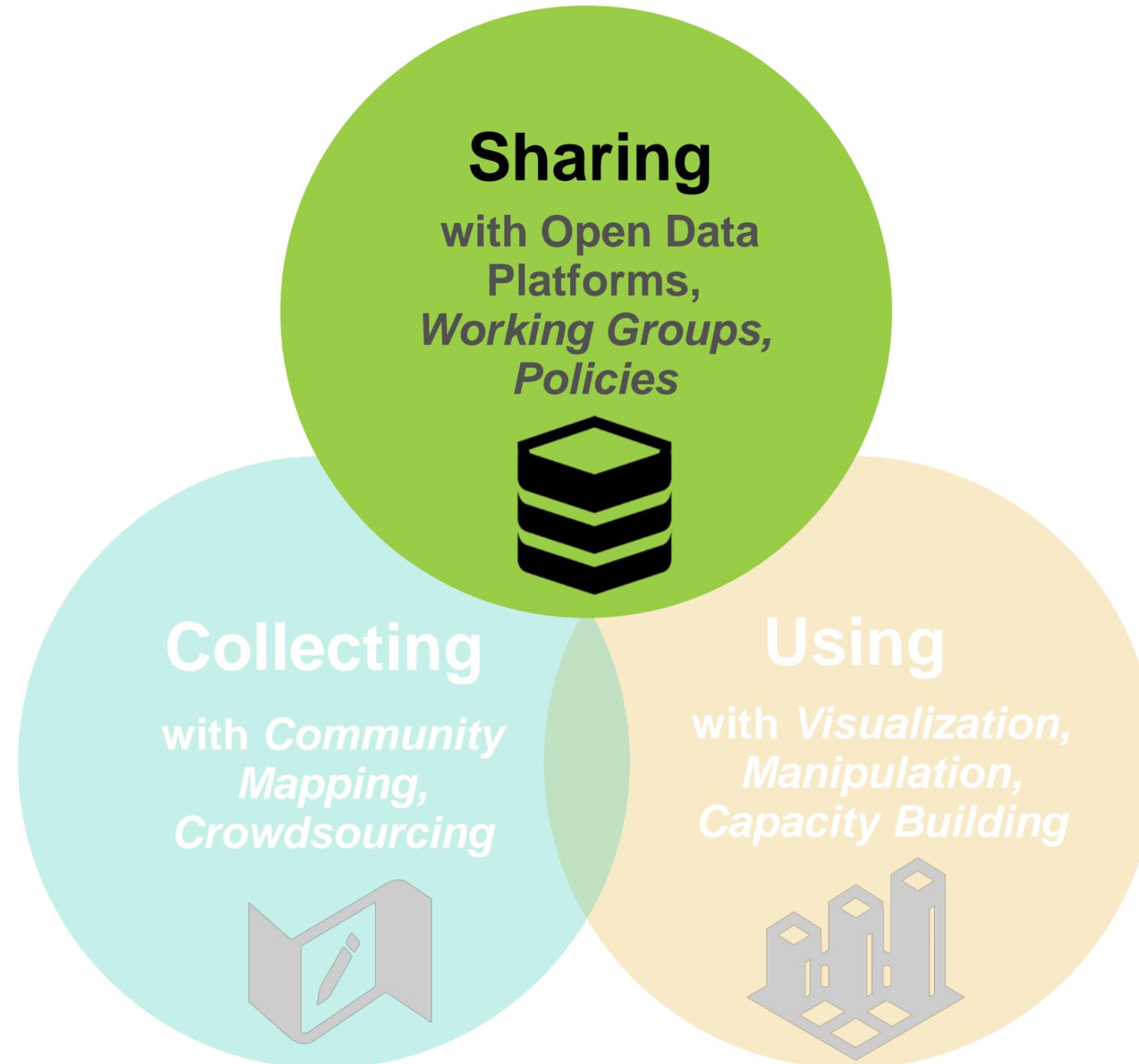
Collecting Risk Information to Inform Decisions

Open Data for Resilience Initiative



Collecting Risk Information to Inform Decisions

Open Data for Resilience Initiative



MASDAP Layers Maps Documents People Search...

Malawi Spatial Data Portal

Welcome to the BETA version of MASDAP, a public platform for GIS Data to support development in Malawi

[Learn more](#)

Welcome to MASDAP

MASDAP is a web-based data sharing tool launched in November 2012, managed by the National Spatial Data Center (in the Department of Surveys), in collaboration with the National Statistics Office and a number of technical Ministries.

[Get Started](#)

GeoNode Search... Подписаться |

ГЛАВНАЯ СЛОИ КАРТЫ ДОКУМЕНТЫ ЛЮДИ ПОИСК

ПРИВЕТСТВИЕ

GeoNode является открытой платформой для распространения геопространственных данных и карт. Если у вас имеются какие-либо вопросы относительно ПО или услуги, свяжитесь с нами по [mailing list](#).

Помощь Начало?

[Исследовать слой](#)

[Изучить карты](#)

GEODASH Search... Sign In |

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BANGLADESH

Area: 144,000 km²

[Explore Layers](#)

OPEN DATA FOR THE HORN

Home Layers Maps Documents Partners Search

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Data for the Horn

In order to build resilience to disasters in a changing climate, policy-makers and the public must have access to the accurate and up to date information. The Open Data for Resilience Initiative (OpenDRI) is a global partnership that seeks to build data sharing programs along with the capacity and tools to use data to make more informed decisions. The purpose of this platform is to facilitate open access to geospatial information, data and knowledge sources, about the ongoing response to the drought in the Horn of Africa. This site is the result of collaboration between development agencies, humanitarian organizations, and technology developers and can be used by anyone to access or upload data and visualize the information contained within.

[Explore Layers](#) [Explore Maps](#) [Upload Data](#)

Ready to share data you have, request for sign up credentials at the contact us page and we will send you credentials which you could upload share some of your data. Help us share data with a community of DRM experts

Open-Source Platform (Geonode)

Haiti Data Search...

HOME LAYERS MAPS DOCUMENTS PEOPLE SEARCH

WELCOME

The purpose of this site is to facilitate open access to Haiti-related geo-spatial information, data and knowledge sources encouraging others to share and use them for the development of Haiti. [Read more](#)

Need help Getting Started?

Categories [Explore Layers](#) [Explore Maps](#)

- Resources and Planning** Maps for transportation, health, structure, economy, planning, society, utilities, and more.
- Geography** Maps for boundaries, elevation, base imagery, inland waters, oceans, and more.
- Locations and Land Use** Maps for biota, environment, farming, land use, and locations.
- Research** Maps for climatology, meteorology, atmosphere, and geoscientific information.

GEODASH Search... Sign In |

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Human development index: 139
Adult literacy: 41%

Sources: World Development Report 2005, the Human Development Report 2005, UN 2005.

Areas where over 80% of contaminated wells contain over 50 mg/L of arsenic

[LATEST LAYERS](#) [LATEST MAPS](#)

Powered by GeoNode version 2.0 | [Developers](#) | [About](#)

InnovationLab GeoNode

Open data to further your understanding of disaster risk

Hazard datasets

We maintain a curation of hazard datasets at the global and country level. Tools like ThinkHazard! use these datasets in the backend.

- Earthquake** 53 datasets
- Drought** 7 datasets
- Flood** 23 datasets
- Tsunami** No datasets

RISKINFO Disaster Risk Information Platform

Risk information for all...

English සිංහල සර්ව

[මුල් පිටුව](#) [ස්රර](#) [සිතියම](#) [ලේඛන](#) [පුද්ගලයන්](#) [සොයන්න](#)

[RISKINFO සොයන්න:](#) Search...

ආයුබෝවන්

2004 Tsunami Time Travel Map - Source NOAA

ලිංගන ආපදා අවදානම් තොරතුරු පද්ධතිය (RiskInfo) වෙත සාදරයෙන් පිළිගනිමු. රාජ්‍ය, රාජ්‍ය නොවන ආයතන සහ සාමාන්‍ය පුරවැසියන් වෙත ආපදා අවදානම් තොරතුරු ලබාදීම මෙම පද්ධතිය ස්ථාපනය කිරීමේ අරමුණ වෙයි. මෙම තාර්කික ආපදා සලකුණකරණ මධ්‍යස්ථානයේ බිහිකරවයෙන්, ලෝක බැංකුවට අනුබද්ධිත GFDRR හා UNDP ආයතන වල සහයෝගිතාවය මත සකස් කරන ලදී. සිතියම සකස් කිරීම, සාක්ෂික ආයතන සහ ආපදා සලකුණකරණ මධ්‍යස්ථානය මගින් සිදුකර ඇත. මෙම දත්ත පද්ධතිය විවෘත හා නිදහස් මෘදුකාංගයක් (FOSS) වන ජියෝනෝඩ් (GeoNode) මගින් නිර්මාණය කර ඇති අතර එමගින් අවිනාශීය දත්ත හා තොරතුරු කුමාරු කිරීමේ හැකියාව වර්ධනය කර ඇත. RiskInfo මගින් මධ්‍යම සිතියම සකස් කිරීම හා අන්තර්ජාලය හරහා බෙදාහැරීම සලකුණ. වැඩිදුර තොරතුරු riskinfo@dmc.gov.lk මගින් විමසන්න.

සිතියම

RiskInfo වලින් මධ්‍යම සිතියම නිර්මාණය කිරීමටත් බෙදා හැරීමටත් ආයතන සලකුණකරණ සිතියම නිර්මාණය කිරීමට හෝ අන්‍ය වැඩිදුර බෙදාහැරන ලද සිතියම සෙවීම සලකුණ.

දත්ත

RiskInfo මගින් සිතියම උඩුකන කිරීමට, සලකුණකරණය කිරීමට සහ දත්ත සෙවීමට ආයතන සලකුණකරණය.

උවදුරු සිතියම **පාලන මාපිති** **උවදුරු දත්ත** **නිරවරණ දත්ත**

සියලුම සිතියම **නව සිතියමක්** **මුල දත්ත** **දත්ත සොයන්න**

නවතම ස්රර

Total: 33

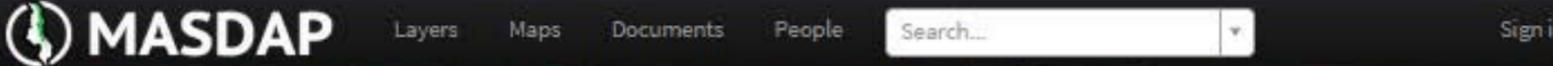
[Gampaha and Colombo Districts Clouds Cover](#)

මිලය ලත් GeoNode 2.0, dev 20131205 154852
ආධාර අවශ්‍යයි getting started?
For සංවර්ධනයක්

Partners

[GFDRR](#) [UNDP](#)

The Malawi GeoNode



MASDAP Layers Maps Documents People Search... Sign in

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[Get Started](#) →



Explore Layers

Most Recent | [Less Recent](#) | [A-Z](#) | [Z-A](#) | [Most Popular](#) | [Relevance](#)

View by [Grid](#) [List](#)

Your selections

Clear all

← Total: 146

▼ LAYER TYPE

Rasters 28

Vectors 118

> CATEGORIES

> DATE

> KEYWORDS



◇ Dartmouth Flood Observatory flood layer (4219nb)

Layer from [keiko](#), 2 months, 1 week ago
Inundation extent GeoTIFF downloaded from Dartmouth Flood Observatory (DFO) website: <http://floodobservatory.colorado.edu/Version3/2015Malawi4219.html> MODIS (light pink)+ Sentinel1 (dark red) data.

112 views 0 ratings

[Create a map](#) [Download](#)

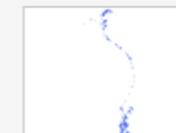


◇ OSM Buildings

Layer from [paolo](#), 2 months, 3 weeks ago
In OpenStreetMap the tag "building" is used to describe many different sorts of buildings, including houses, factories and ruined buildings. This layer is an extract of buildings in Malawi including information on the construction materials, number of levels. See <http://wiki.openstreetmap.org/wiki/Buildings> for detailed description on how the buildings have been tagged. Some subkeys were extracted for additional information about the house number, house name and address (see: <http://wiki.openstreetmap.org/wiki/Key:addr>)

104 views 0 ratings

[Create a map](#) [Download](#)



◇ Flooded Areas by Copernicus as of 27/01/2015 in Southern area

Layer from [simob](#), 2 months, 3 weeks ago
Heavy rains over the last few weeks have led to severe flooding across Malawi. To date, an estimated 173.700 people have been displaced. The floods have also caused extensive damage to crops, livestock and infrastructure. The southern districts of Nsanje, Chikwawa, Phalombe and Zomba are the most affected. Some areas are inaccessible, impeding the conduction of assessments [<http://emergency.copernicus.eu/mapping/list-of-components/EMSR116>].

88 views 0 ratings

[Create a map](#) [Download](#)



◇ OSM Villages

Layer from [paolo](#), 2 months, 3 weeks ago
GeoGig was used to extract data from OpenStreetMap

84 views 0 ratings

[Create a map](#) [Download](#)



◇ OSM Schools (Points)

Layer from [paolo](#), 2 months, 3 weeks ago
This layer is an extract of OSM points tagged as school or university. The use of amenity=school is to identify a place where pupils, normally between the ages of about 5 and 18 are taught under the supervision of teachers. This includes primary and secondary schools.

74 views 0 ratings

[Create a map](#) [Download](#)



◇ OSM Medical Centers

Layer from [geonode](#), 2 months, 3 weeks ago
This layer is an extract from OpenStreetMap of points tagged as hospital, doctor(s) or clinic in Malawi. Additional information are about the name, the operational status, operator type, capacity (beds), health facility type and designation (legal classification of an object).

75 views 0 ratings

[Create a map](#) [Download](#)

Our approach to improving data sharing

- ❑ **Consider the Policy Environment:** DRM laws, Open Government Partnership (OGP), MoUs, licenses
- ❑ **Work with the Government to identify the most appropriate technical solution:** cloud or local hosting, build on existing or create new infrastructure, open-source or proprietary
- ❑ **Institutional Infrastructure:** establish or reinvigorate disaster and climate data working groups
- ❑ **Building Capacity** through progressive long-term engagement and short-term training courses
- ❑ **Ensure there is immediate application of new data sharing systems**

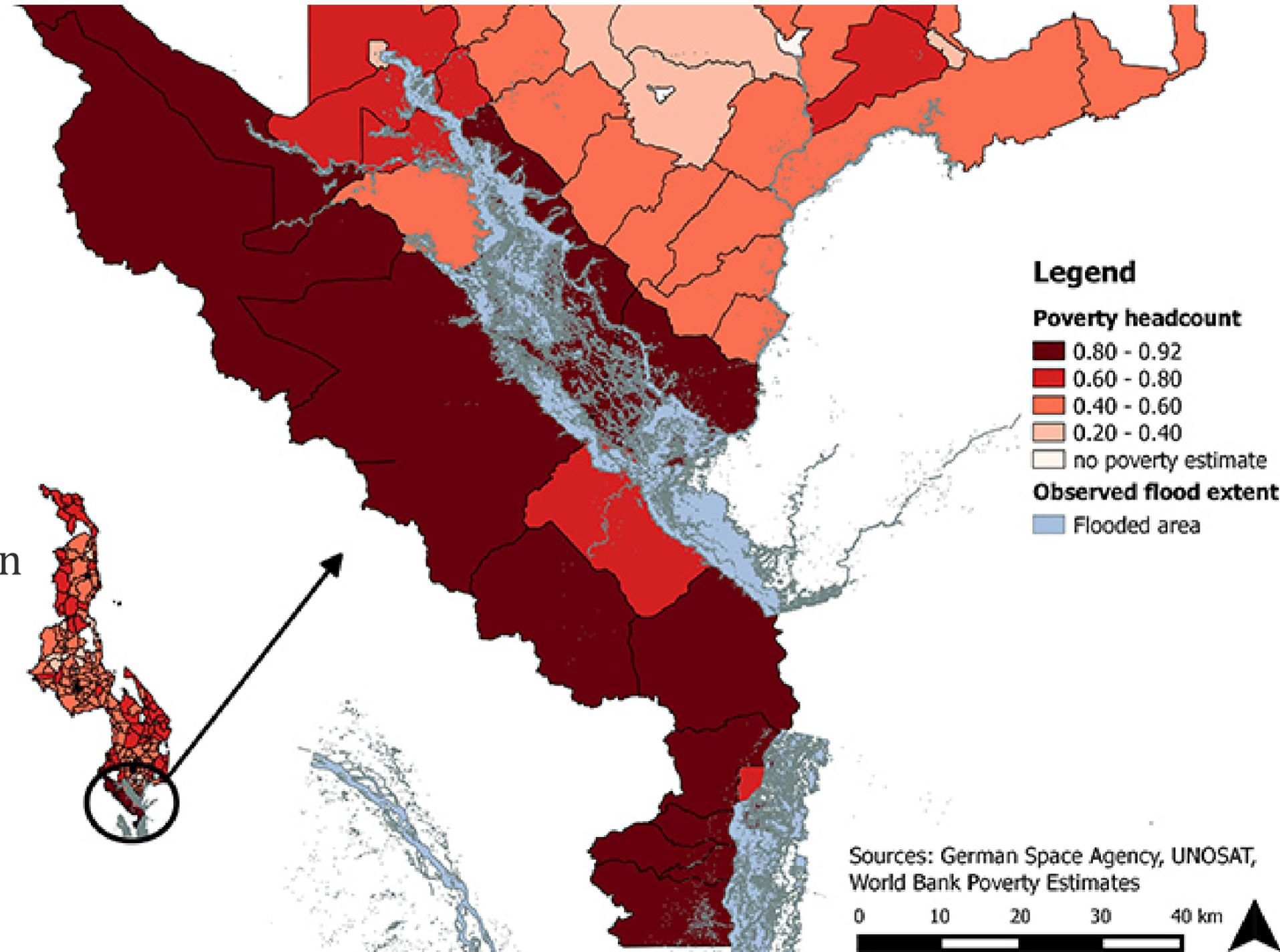
Malawi: Putting the data and skills to work

January 2015 floods:

- Most impacted districts were Nsanje and Chikwawa
- Affected >600,000 people, displaced 200,000, and damaged 35,000 ha of agricultural crops
- Affected the poorest the hardest

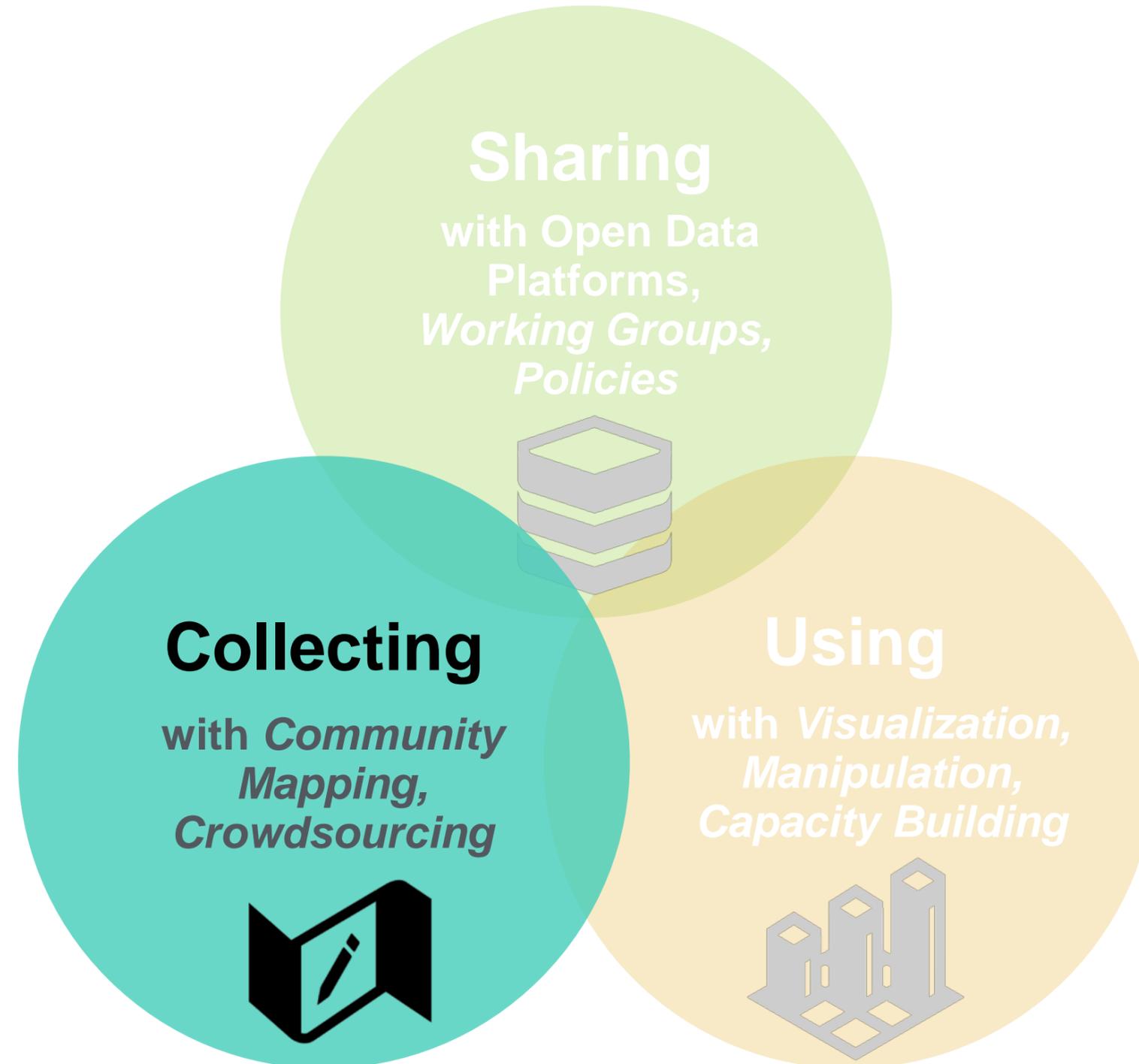
The benefit of having data and Masdap Platform

- All data from the flood event was shared on the official Government GeoNode (eg. satellite imagery)
- Quick estimates could be made by the Government to understand the spatial impact – supported PDNA



Collecting Risk Information to Inform Decisions

Open Data for Resilience Initiative



Traditional Approach to Data Collection



Advantages to a Collaborative Approach

Started in Haiti and Indonesia using the OpenStreetMap platform

**Resources focused
towards building
capacity**

**Transparent &
Reusable**

**Scalable and
Maintainable**

**Foster more
usage of the data**



Collaborative

**Builds Govt capacity to
understand risk**

**Building local ownership and
trust in the data**

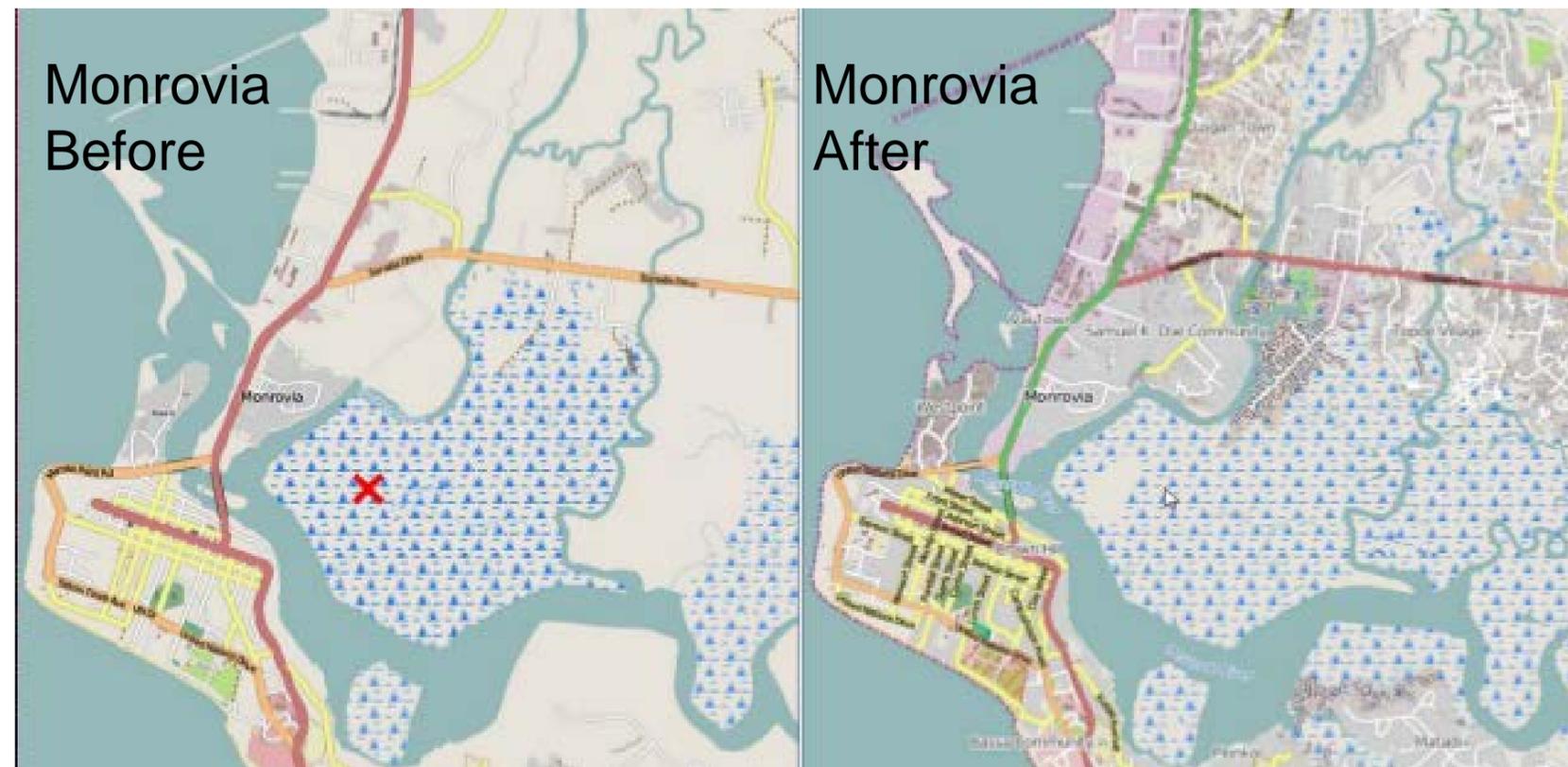
**Raises community
awareness of risk**

Collecting Data for Risk Identification



2010 Haiti:

> 600 volunteers
from 29 countries
> 1.2 million
edits
~1 year of work
completed in 20
days



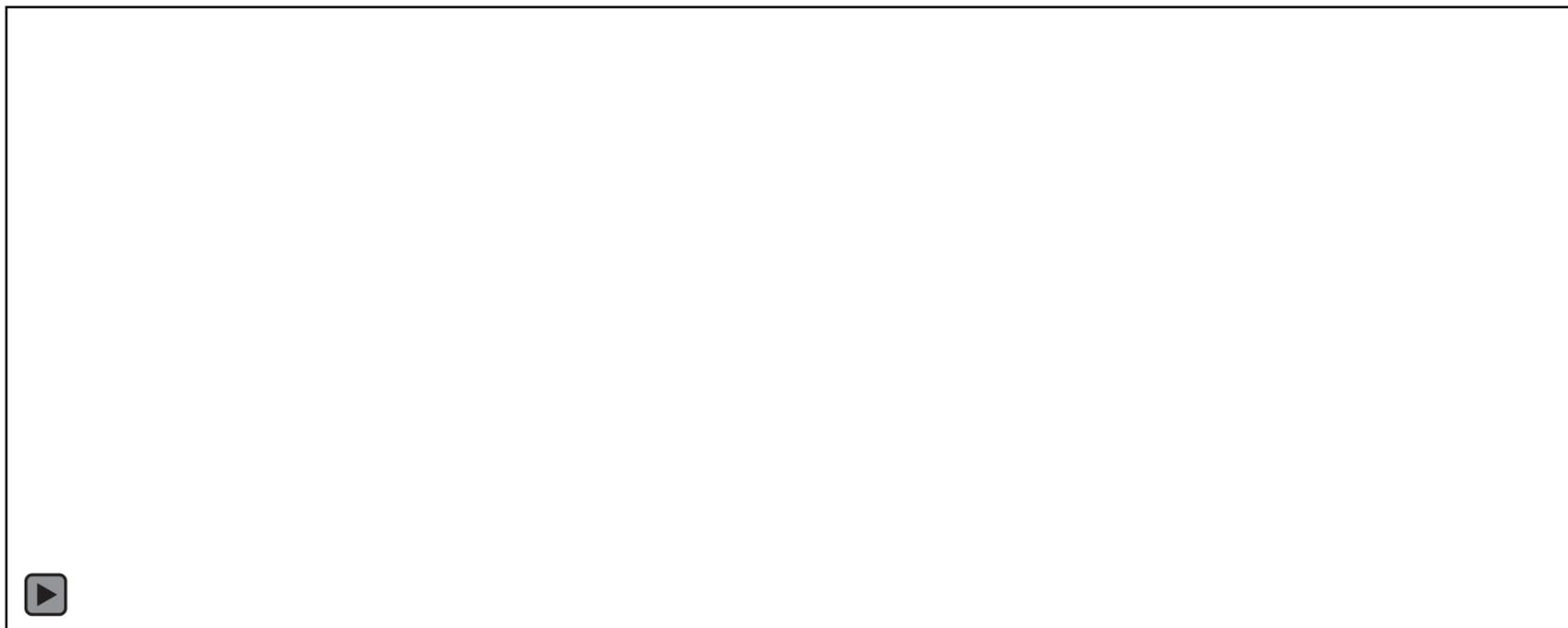
West Africa Ebola:

>2,000 volunteers
>12 million edits
>62 km of roads
>11,000 places
>500,000
buildings

Nepal Earthquake

Supporting data creation for preparedness and during crisis

- ❑ Partnership with NSET and Kathmandu Living Labs (est. under Project) >2,256 schools with 14 attributes >350 health facilities >200 public buildings >100,000 buildings
- ❑ Train local government officials, university students, local communities and local NGOs



Collecting Data for Risk Identification

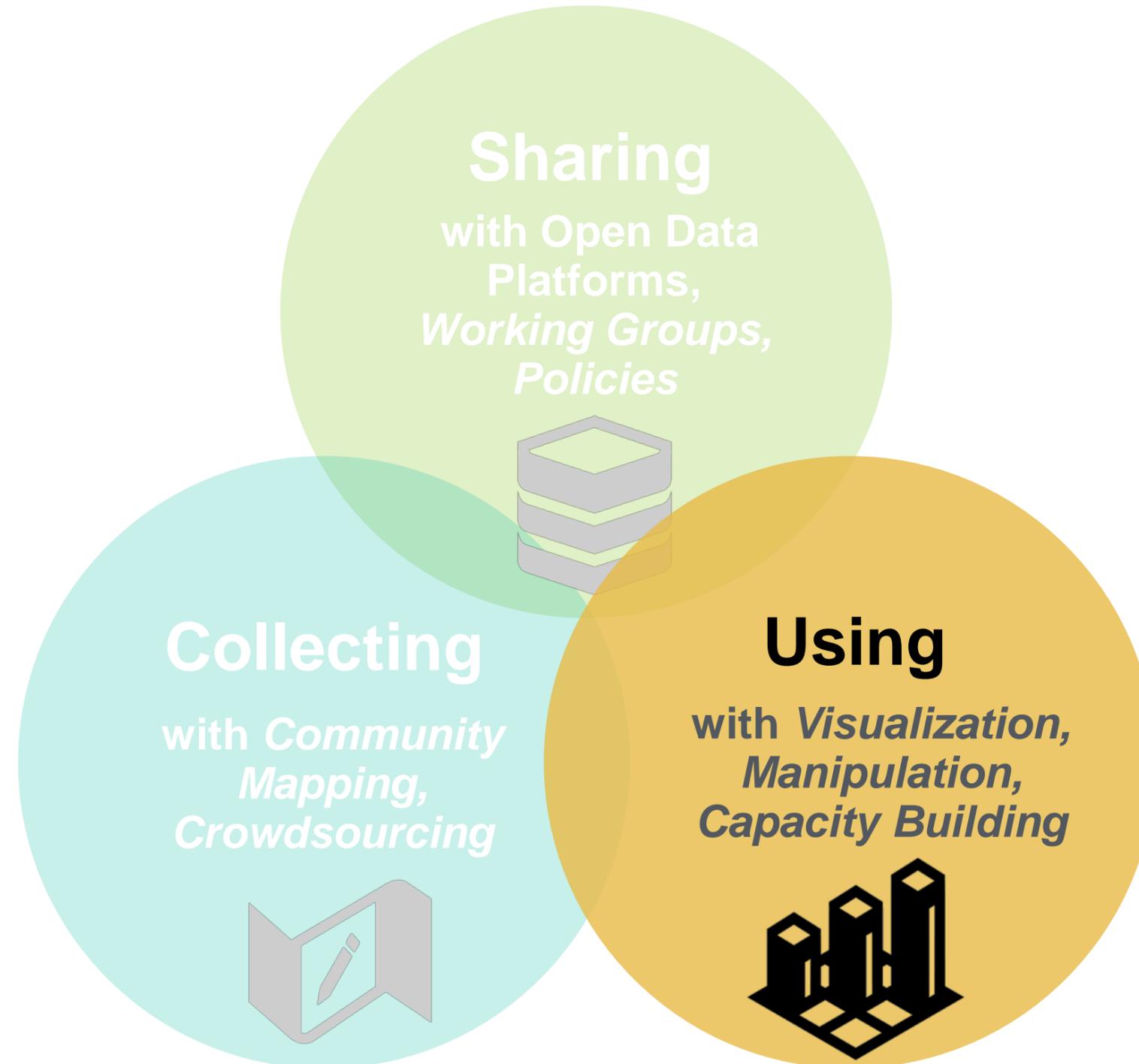
Supporting data creation for preparedness in Malawi, Tanzania, Madagascar and Comoros

- ❑ To identify and map assets at risk, village locations, transportation networks and village facilities and to make this data open
- ❑ Train local government officials, university students, local communities and local NGOs
- ❑ Results:
 - Malawi: 21,000 buildings, 10,000 showers and family toilets mapped in 450 districts
 - Comoros & Madagascar: two training events held



Developing Risk Information to Inform Decisions

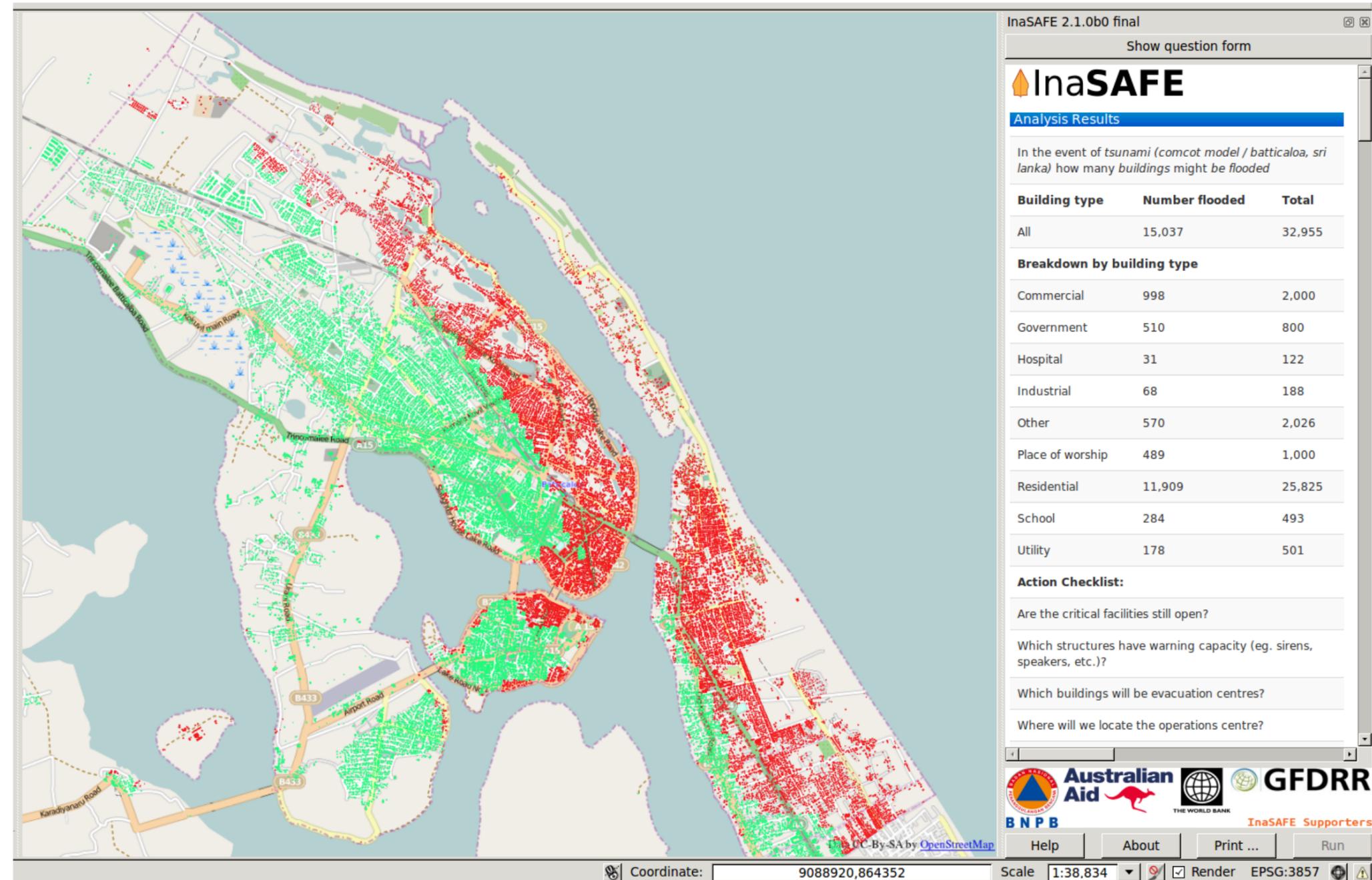
Open Data for Resilience Initiative



Using Data through Open Source Tools Tailoring Information

InaSAFE – Scenario-based contingency planning

- ❑ Get the best available scientific and community data to bear on disaster management decisions.
- ❑ More aware of the risks that we face; and be better coordinated and less surprised when a disaster strikes.



Consolidating Knowledge for Better Decisions

Think Hazard!

About FAQ References Contact us English

ThinkHazard!

Identify natural hazards in your project area and understand how to reduce their impact

Enter location... (e.g. Turkey, or Istanbul)



ThinkHazard! Enter location... (e.g. Turkey, or Istar)

About FAQ References Contact us English

Indonesia

Indonesia

Download PDF



Earthquake

Hazard level: **High**

In the area you have selected (name of location) earthquake hazard is classified as **high** according to the information that is currently available. This means that there is more than a 20% chance of potentially-damaging earthquake shaking in your project area in the next 50 years. Based on this information, the impact of earthquake **must be considered** in all phases of the project, in particular during design and construction. **Project planning decisions, project design, and construction methods should take into account the level of earthquake hazard.** Further detailed information should be obtained to adequately account for the level of hazard.

Recommendations

- Consider the disturbance due to [phenomenon] on the availability and function of: public services; transport, communications, water, sanitation and energy infrastructure; public health and on agricultural production .
- Consider the effect that collapse (or destruction) or serious damage to buildings and infrastructure associated with the planned project could have on the local population and environment.
- Consider purchasing insurance to cover potential losses to the project .
- Contact local or international staff that have experience of working in the project area to understand how they sought to reduce earthquake risk in past projects (see additional information).
- Contact the governmental organisations (e.g. ministry of environment and geological survey) responsible for management of earthquake risk in the project country to obtain more detailed information on the potential earthquake risks.
- Obtain and comply with the seismic regulations and building codes relevant to the project areas, especially with respect to planning and construction. This includes: type



Earthquake hazard level

Indonesia



DATA SOURCE
** Put the sources here

Further resources

For further information the following resources could be consulted:

Capacity Building through GFDRR Country Projects

1-5 day training programs

☐ Topics:

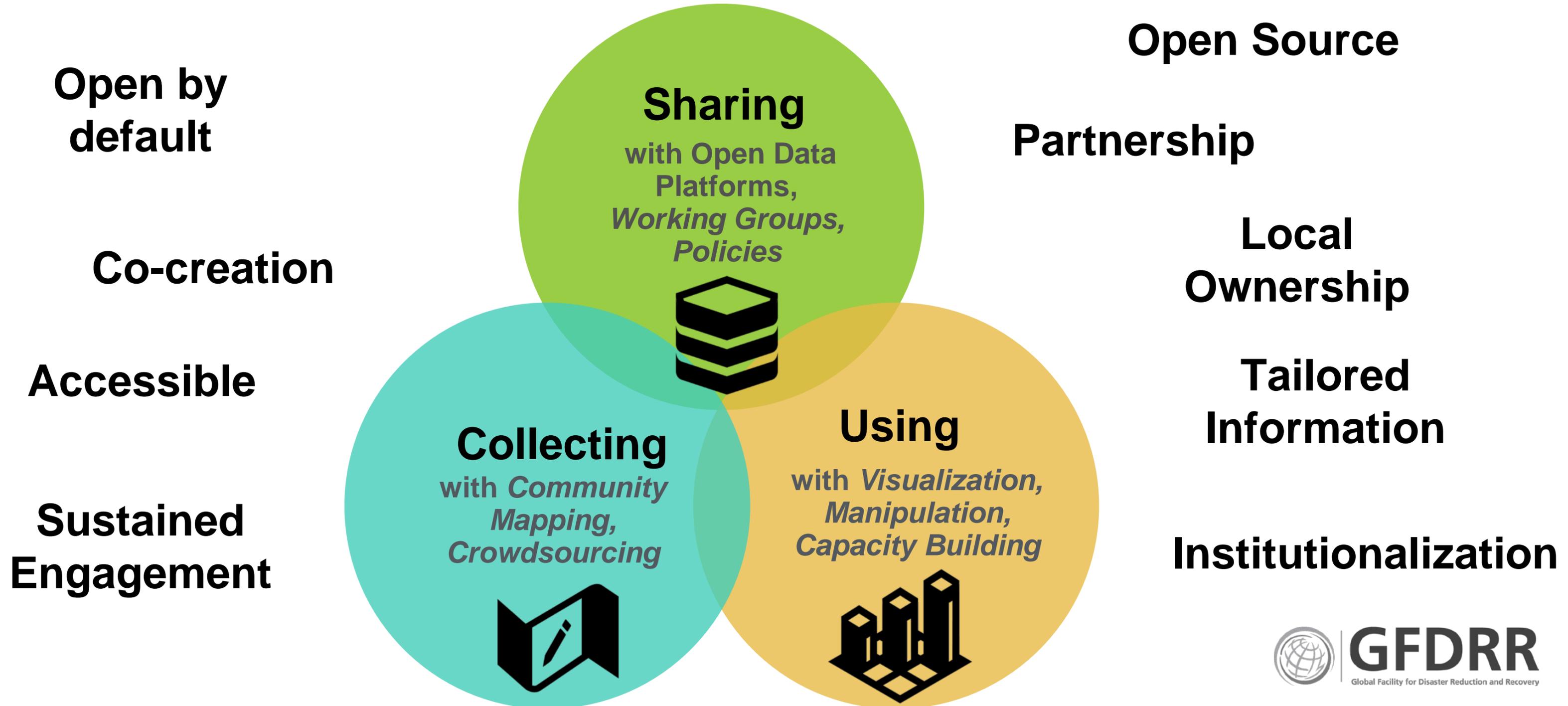
- establishment and maintenance of geospatial platforms (eg. GeoNode);
- data collection (eg. OpenStreetMap)
- Analytics for preparedness (eg. InaSAFE);
- Design, implementation and communication of risk assessment

☐ Modality: field-based, serious games, computer-based, fellowships

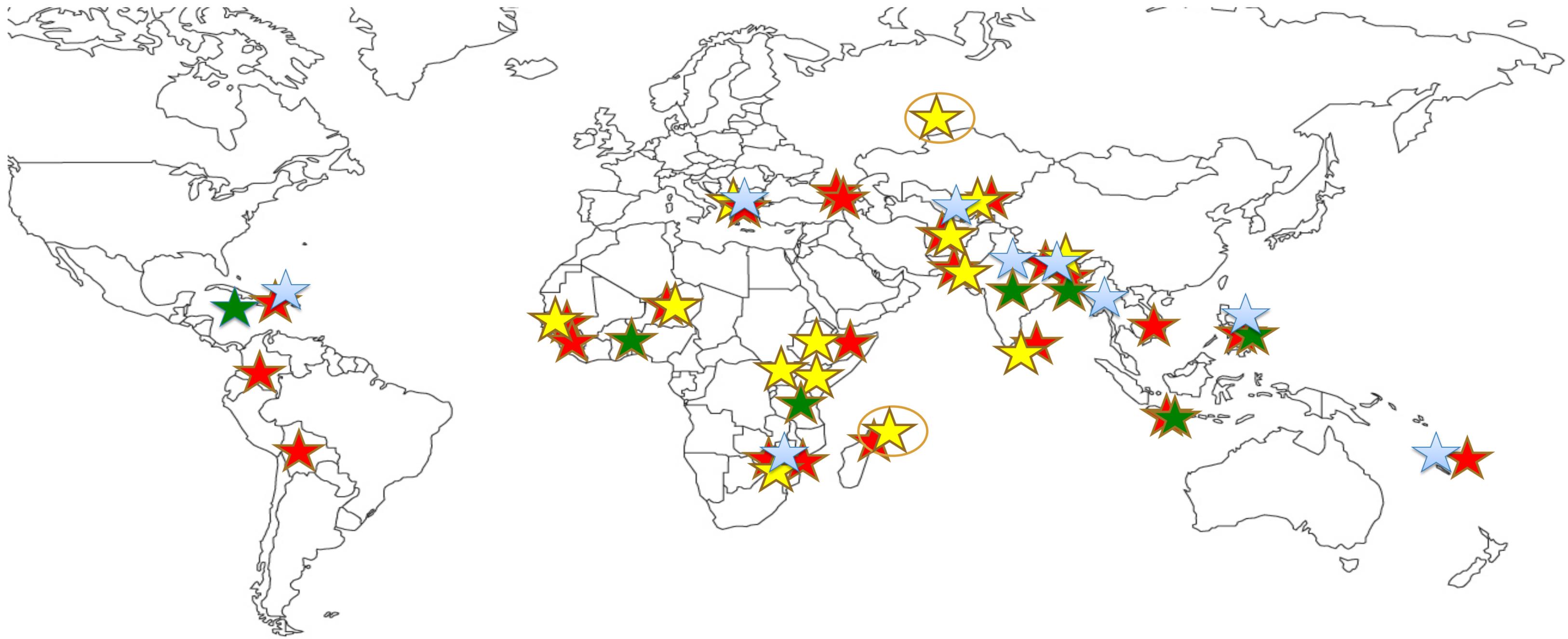


Developing Risk Information to Inform Decisions

Open Data for Resilience Initiative



Innovation Lab – A Global Perspective

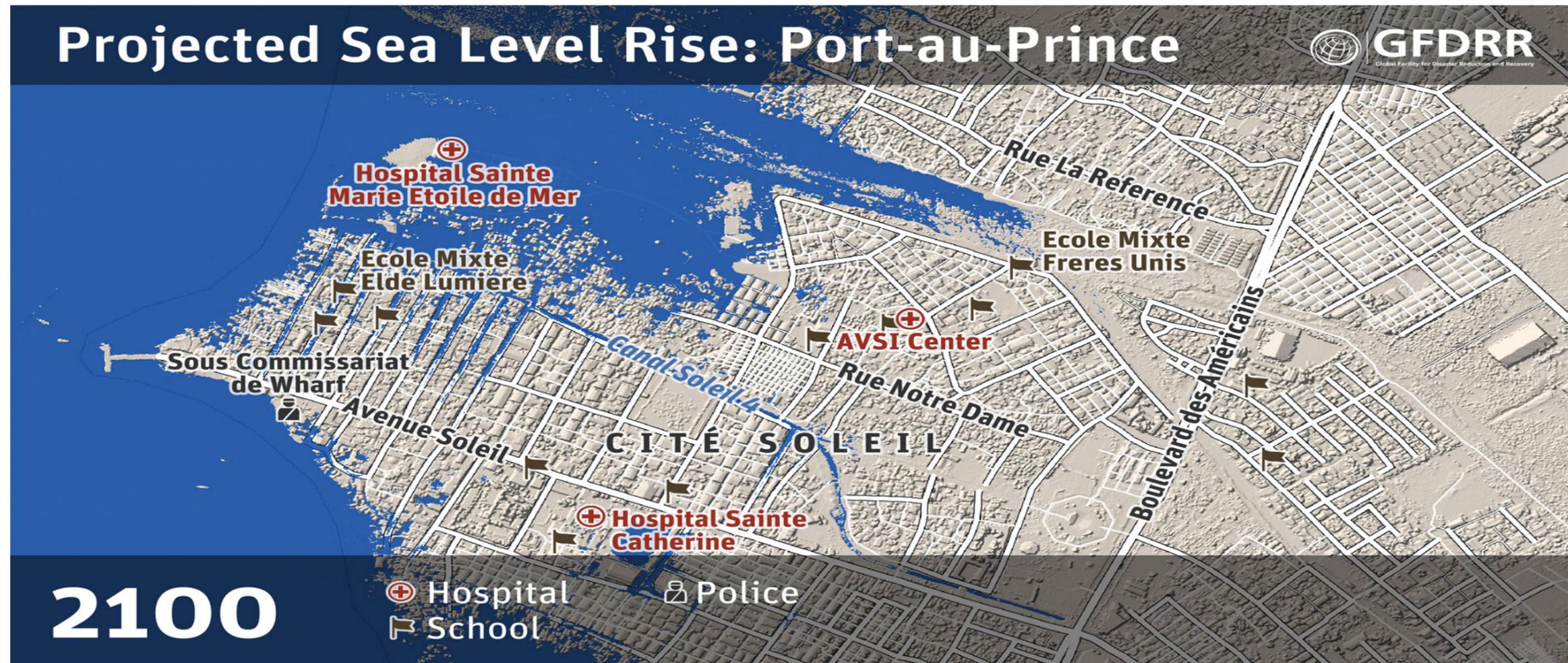


-  Open Data for Resilience
 -  Risk Assessment
 -  Spatial Impact Assessment
 -  Code for Resilience
-  (regional)

Scaling Up Open Data for Resilience

Generate and release of an Open Dataset of the African Coastline and Rivers

- To quantify the risks from coastal erosion, sea-level rise, coastal inundation
- *USD \$7M investment could generate a highly detailed map of the Sub-Saharan Coastline*
- *USD \$12M investment would cover the Sub-Saharan Coastline and major riverine areas*



Scaling up Open Data for Resilience

Strengthening Local and National Organizations to Map in Fastest Growing Urban Areas of Sub-Saharan Africa and South Asia

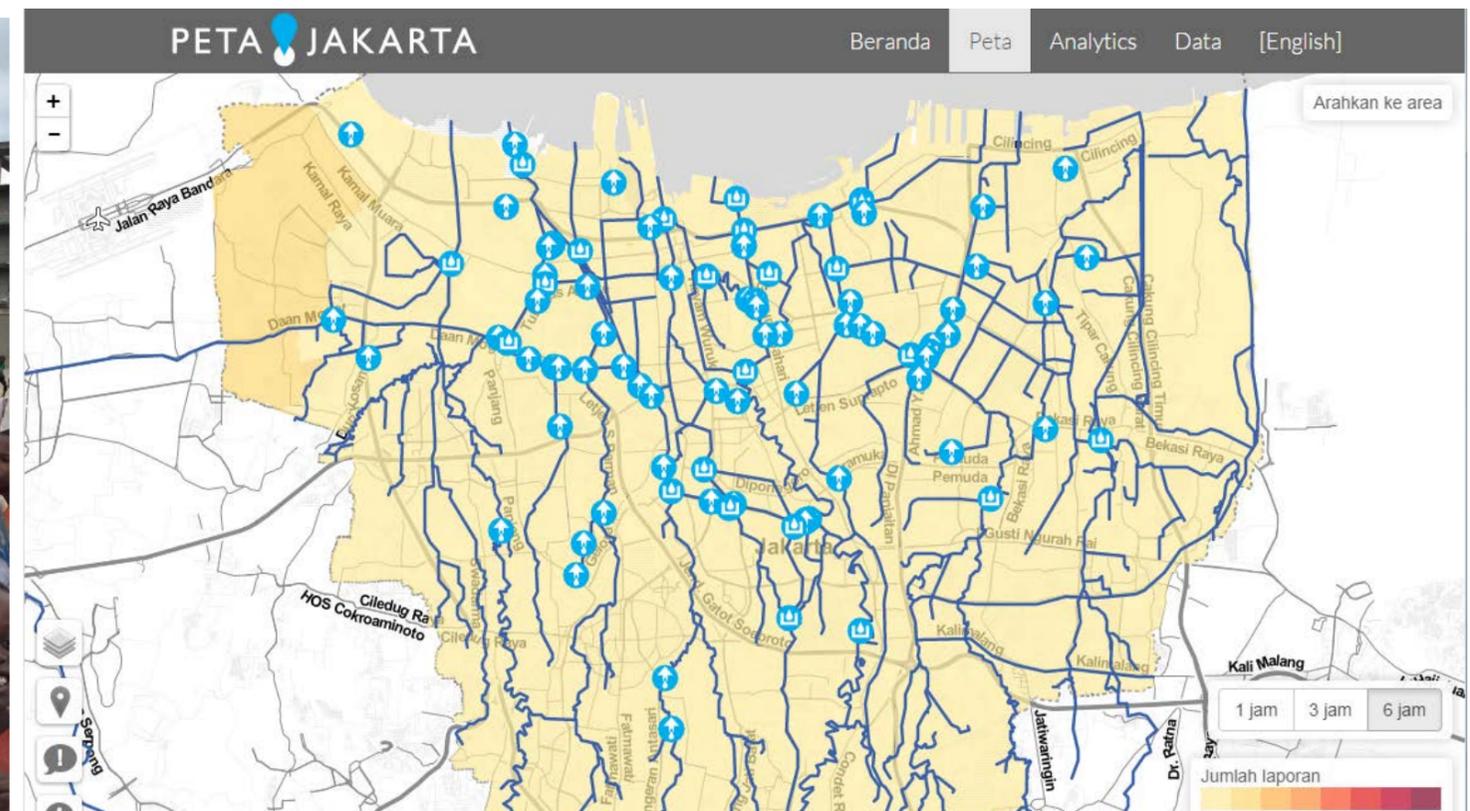
- Partnership with International Organizations, NGOs, Governments, Universities and local volunteers
- Collect information on schools, medical facilities, transport infrastructure, religious and community facilities, water and sanitation facilities, vulnerable populations etc
- *USD \$20M investment could focus efforts in 50 high risk and rapidly growing cities*



Scaling up Open Data for Resilience

Fostering nascent innovation in new technology to increase resilience

- Harnessing the rapid development in big data, machine learning, micro-satellites and social media to build resilience
- Fostering locally developed hardware and software solutions to improve resilience (eg. attenuation of cell phone signals to monitor rainfall intensity)
- More research into behavioral insights and communication – motivating people to take more rational actions



Questions?
