

Climate Resilience Decision Making Framework in the Caribbean

A case of Spatial Data Management

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Background

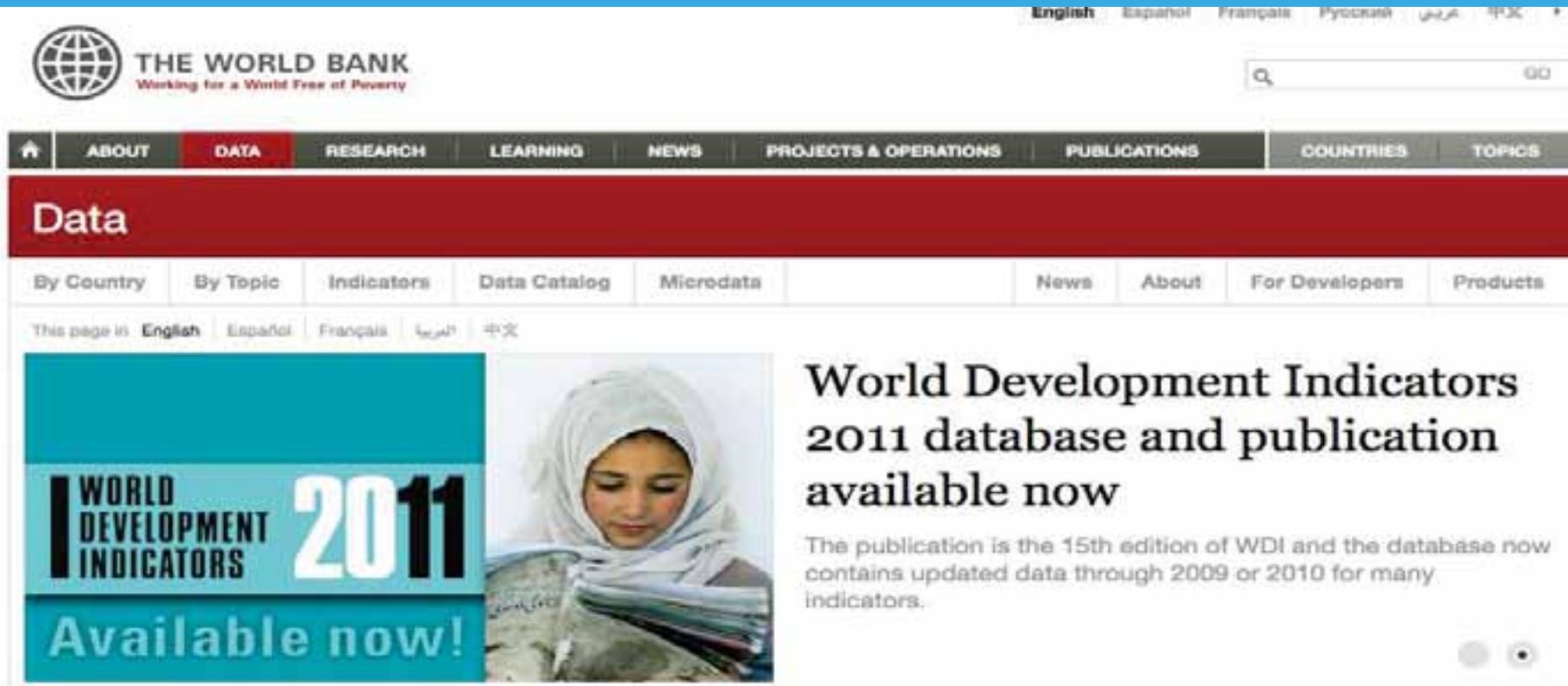
The mission of The World Bank's Latin America and the Caribbean Region (LCR) Disaster Risk Management (DRM) team is to work with national and local governments and with communities to identify hazard risk, assess vulnerability to adverse natural events and mitigate the impact of disaster through structural and non-structural measures, including risk financing and transfer.

Spatial Data is the *key* to the analysis.

Building resilience and better decision-making

- * Latin America and the Caribbean (LAC) region is one of the most vulnerable region with respect to natural disasters
- * 20 countries in LAC region has half of the GDP exposed to natural disasters
- * Damages due to natural hazards happen because of **HOW** and **WHERE** we build
- * The key component in decision making is using (geospatial) data in decision making process

Open Data & the World Bank



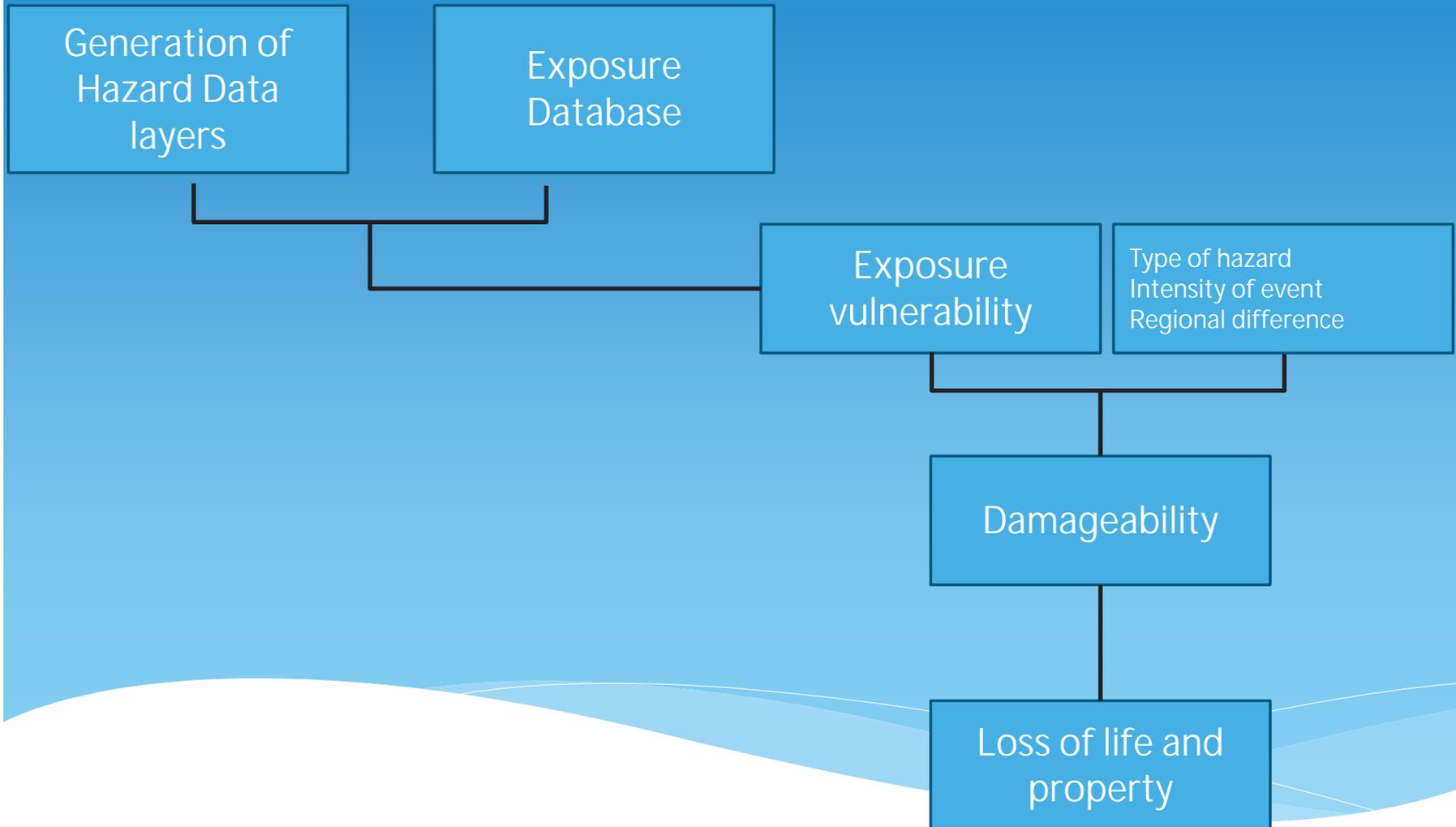
The screenshot shows the World Bank website's 'Data' section. At the top, there is a navigation bar with links for ABOUT, DATA (highlighted), RESEARCH, LEARNING, NEWS, PROJECTS & OPERATIONS, PUBLICATIONS, COUNTRIES, and TOPICS. Below this is a red banner with the word 'Data' in white. Underneath the banner are several tabs: 'By Country', 'By Topic', 'Indicators', 'Data Catalog', 'Microdata', 'News', 'About', 'For Developers', and 'Products'. The main content area features a large teal banner on the left that reads 'WORLD DEVELOPMENT INDICATORS 2011 Available now!' next to a photograph of a young girl in a white headscarf looking at a book. To the right of the banner, the text reads 'World Development Indicators 2011 database and publication available now' followed by a short paragraph: 'The publication is the 15th edition of WDI and the database now contains updated data through 2009 or 2010 for many indicators.'

The World Bank recognizes that transparency and accountability are essential to the development process and central to achieving the Bank's mission to alleviate poverty. As a knowledge institution, the World Bank's first step is to share its knowledge freely and openly.

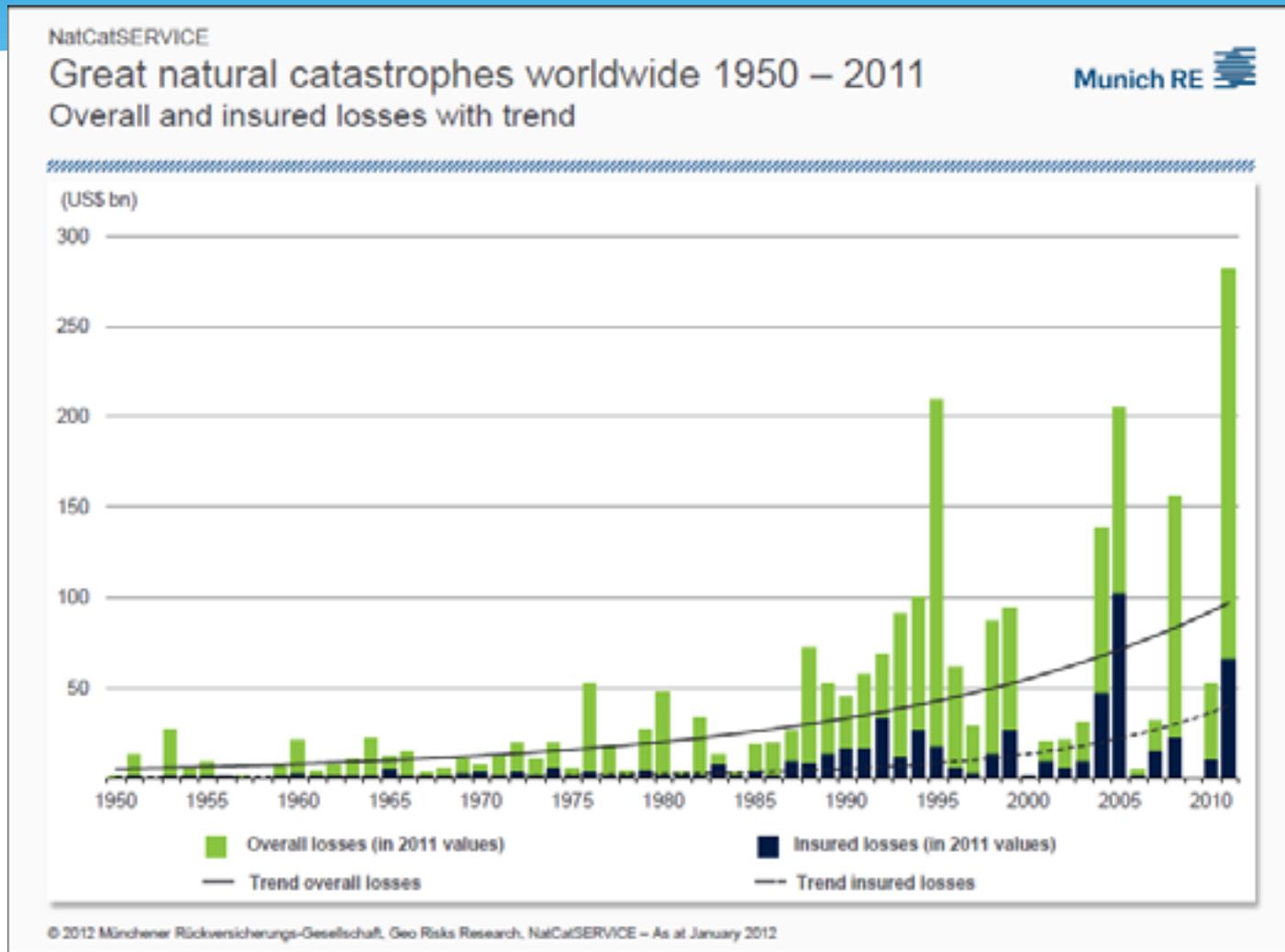
Open Data for Resilience Initiative (OpenDRI)

The Open Data for Resilience Initiative (OpenDRI) is a global partnership that aims to encourage and facilitate the sharing and use of climate, disaster and other geospatial data to enable more effective decision-making by providing the rationale, technical assistance, and tools for data sharing.

Risk Assessment Process



Risk Assessment – Why it matters?



Source: Munich Re

Spatial Data

Data is inherently Multi-dimensional

Attribute

Location

Temporal

Quality

Resolution

Exiting Spatial Data Situation

- Not enough data to carry out analysis
- Existing data not readily available
- Numerous data format
- Poor or questionable data quality
- Scale of the data not sufficient
- Metadata non-existent or scant
- Data Vintage
- Data not in digital format or not in raw machine readable format



No comprehensive
Data Sharing
mechanism

Spatial Data Management Activities in the Caribbean



One of the largest community of practitioners with over **120 active community members**.

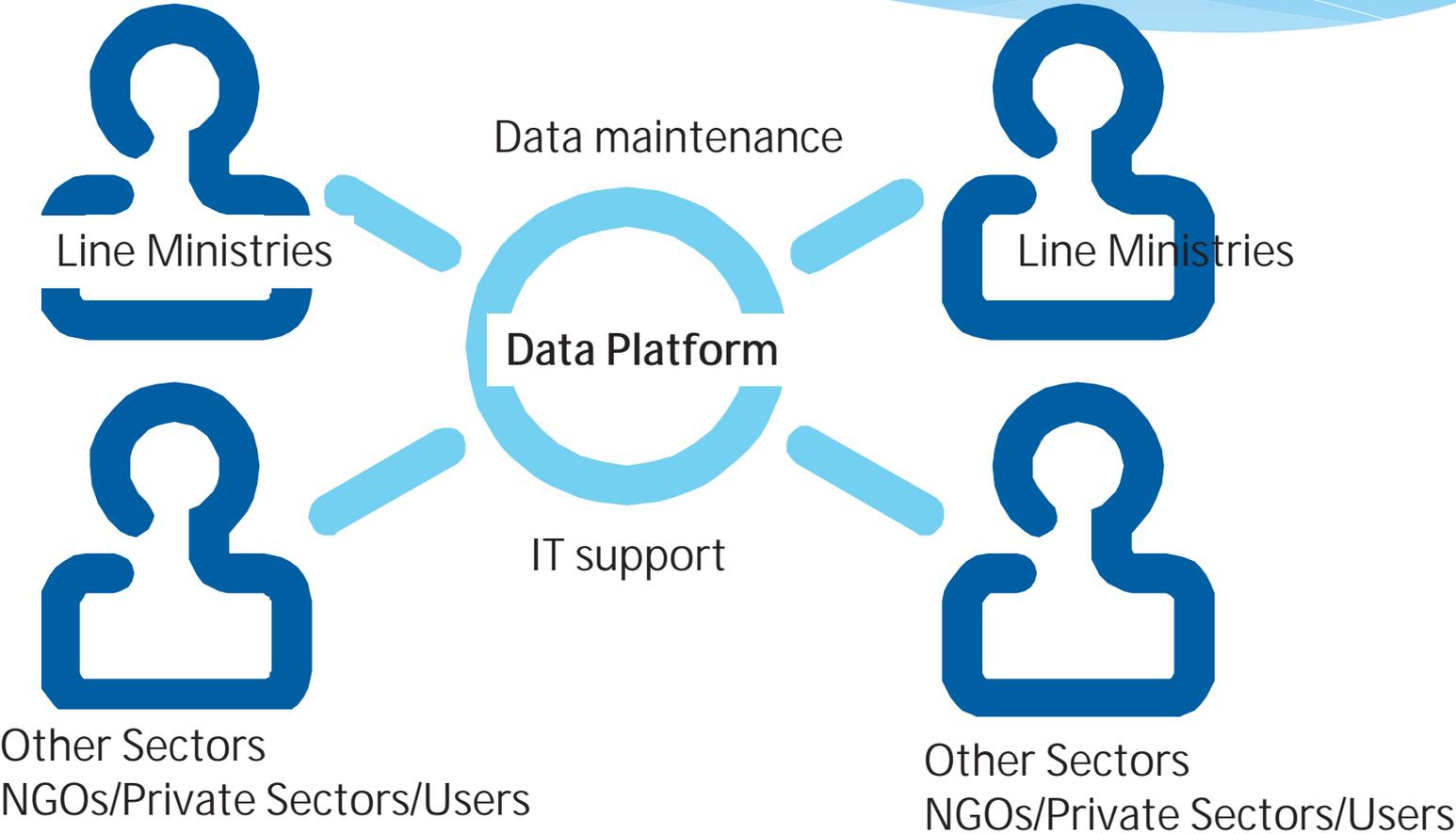


Haiti	www.haitidata.org
St. Lucia	http://sling.gosl.gov.lc/
SVG	http://geonode.gov.vc/
Dominica	Intranet version only
Grenada	Intranet version only
Belize	http://geoserver.bnsdi.gov.bz/
Guyana	Coming soon

Collaboration Framework

Data Provider

End Users



Example from Belize

A national policy on NSDI was approved by Cabinet on Sep., 2012

Sub- committees were formed to design and draft guidelines.

- a. Data Quality and Standards
- b. Network Architecture and Platform Standards
- c. Data Access and Security
- d. Maintenance and oversight

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Dominica moves to improve its data collection capability

Dominica News Online - Wednesday, August 18, 2010 at 4:10 PM



Dominica is positioning itself to better deal with the problems being faced in data collection.

Individuals from the public and private sectors in Dominica are currently participating in a consultation on Geospatial Data Management.

The initiative is a joint one between the government of Dominica and the World Bank.

Speaking at the consultation, Minister responsible for Physical Planning, Dr. Kenneth Darroux, commended insipid collaboration and data sharing as Dominica's shortcomings in that area.

He says the lack of data policies is one of the fundamental reasons for this.

"This situation has hindered the growth and development of a vibrant Geospatial data base community in Dominica. Other issues would include a lack of awareness among departments and agencies, duplication of data collection efforts and non development of some critical data bases," he said.

Darroux said the consultation is very timely and paves the way for improving the country's data base collection.

Meanwhile Darroux says that having been involved in geospatial data collection since the mid 1990's, Dominica is now ready to join the rest of the international community to pursue a more strategic approach to disaster risk management and planning.

He says geospatial data is critical for informed decision making on climate resilience and reducing risks to the adverse effects of climate change.

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THE WORLD BANK
Working for a World Free of Poverty

News

Caribbean: Data Managers/Developers to use Spatial Data for Disaster Risk Management

February 25, 2010

PORT OF SPAIN, Trinidad and Tobago, February 25, 2010 – More than 40 Caribbean data managers, IT specialists and software developers concluded the weekend of the St. Augustine campus of the University of West Indies a one week long gathering where they learned how to manage, share, and increase the use of spatial data to reduce disaster risk in the Caribbean.

Participants were trained on the use of GeoInfo, an open-source geospatial data sharing and management platform, which allows national ministries and agencies to produce, manage, view, and share data in a central repository to increase the value and use of data to inform decision-making.

The training was sponsored by the World Bank, the University of West Indies, and the African Caribbean Pacific/European Union Natural Disaster Risk Reduction Program (ACP-EU NDRR), which is funded by the European Union and managed by the Global Facility for Disaster Risk Reduction (GFDRR).

"By promoting open data and making use of spatial data and analysis, the region is likely to benefit from better decision-making procedures to improve resilience to current and future climate impacts," said Barbara Pandey, World Bank Senior Data Management Specialist.

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NEWS RELEASE NO.
2010/02/25/EN

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- World Bank Group - Swedes Lay Support for Global Reaction Programs in Response to Stronger Climate Risk Prognosis



Emerging Technologies

GeoNode - Spatial Data Management Platform Technology

GeoNode

A new approach to spatial data infrastructure focused around users and collaboration

Simple web-based tools

- Edit metadata in the same place
- Privacy controls to restrict access as needed



Add Data From External Source

The image shows a screenshot of the Google Earth interface. The main map displays a satellite view of North America, with a semi-transparent, dark, textured overlay covering the United States and parts of Canada. The overlay appears to be a map of a specific region, possibly related to the WMS server being added.

In the top-left corner, there is a menu bar with options: Add Layers, Save, Custom Features, Edit Features, Identify, Gazetteer, Link, Print, About, Google Earth, Street View, and Jump to. Below the menu bar is a toolbar with navigation controls.

On the left side, there is a 'Data' panel with a 'Legend' tab. Under 'Map Layers', there are two layers listed: 'goes-east-r-4km-900813' (checked) and 'nexrad-n0q-900813-m50m'. Below these are 'Boundaries' and 'GeoRSS Feeds'. At the bottom of the 'Data' panel, there is a 'WMS Map Server' section with an 'Add New Server...' button.

The 'Add New Server...' dialog box is open, showing the following fields:

- URL: <http://mesonet.agron.iastate.edu/cache/t>
- Type: WMS ArcGIS REST
- Buttons: Cancel, Add Server

The background map shows various geographical features, including the Gulf of Alaska, the Gulf of Mexico, and the North Atlantic Ocean. Labels for countries like Canada, United States, Mexico, and Central/South American countries are visible.

Add Data From External Source

GeoRSS Feed

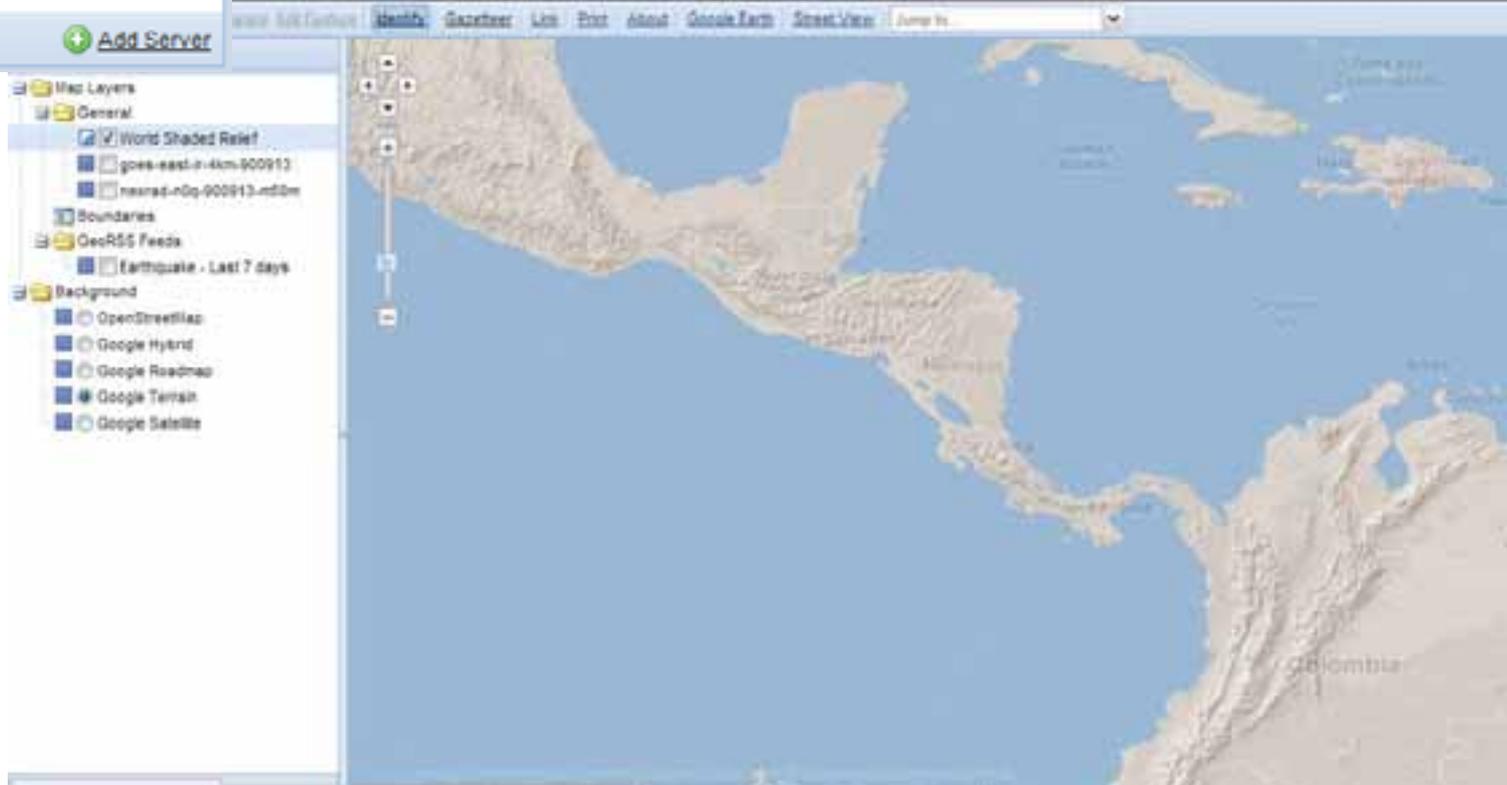
The screenshot displays the Google Earth interface with the 'Add a GeoRSS Feed' dialog box open on the left. The dialog box contains the following fields and options:

- Type:** Radio buttons for Picasa Photos, YouTube Videos, Harvard Geospatial Library, and Other GeoRSS Feed (selected).
- Feed Title:** Text input field containing 'Earthquake'.
- URL:** Text input field containing 'http://earthquake.usgs.gov/earthqu...'.
- Symbol:** A dropdown menu.
- Size:** Text input field containing '10'.
- Fill:** Checked checkbox. Color: '#800000'. Opacity: A slider.
- Stroke:** Checked checkbox. Style: 'solid'. Color: '#000000'. Width: '1'. Opacity: A slider.

The main map area shows a satellite view of the Americas. Numerous red triangle markers are scattered across the continent, representing earthquake locations. A tooltip is displayed over a cluster of markers in the Dominican Republic, containing the text: 'M 4.7, Dominican Republic, October 17, 2012 03:30:47 GMT'. The 'Data' panel on the left shows a legend with 'Earthquake' selected under the 'GeoRSS Feeds' category. The 'Add to Map' button is visible at the bottom of the dialog box.

Add Data From External Source

ArcGIS Server

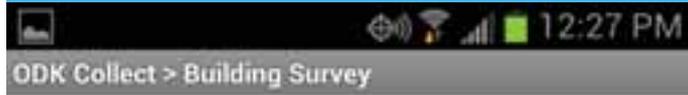


Community Based Mapping

Students learning on use of mobile mapping technology in Dominica



Mobile Mapping



Location

Replace Location

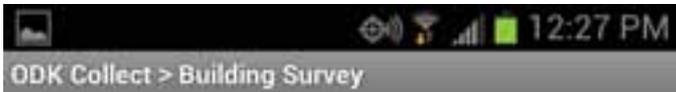
Latitude: N 38°52'54"
Longitude: W 77°24'9"
Altitude: 85m
Accuracy: 5m

Number of Stories

1 4

2 5

3 More than 5



Today's Date

+ + +

Feb 17 2013

- - -



Use of Smartphone in capturing real time data

From Data to Decision

Belize Climate Resilience Infrastructure Project

Dominica Shelter Vulnerability Assessment

CLIMATE CHANGE ADAPTATION DECISION SUPPORT TOOL

INFRASTRUCTURE CRITICALITY

Driven by Belize key stakeholders
(Ministries, Agencies)

MCE
RANKING OF ROAD SEGMENTS

HAZARDS EVALUATION

WB driven
(Hazard Analysis based on
occurrence of past events,
probabilistic assessments, etc)

HAZARD ANALYSIS:
HAZARD LEVELS

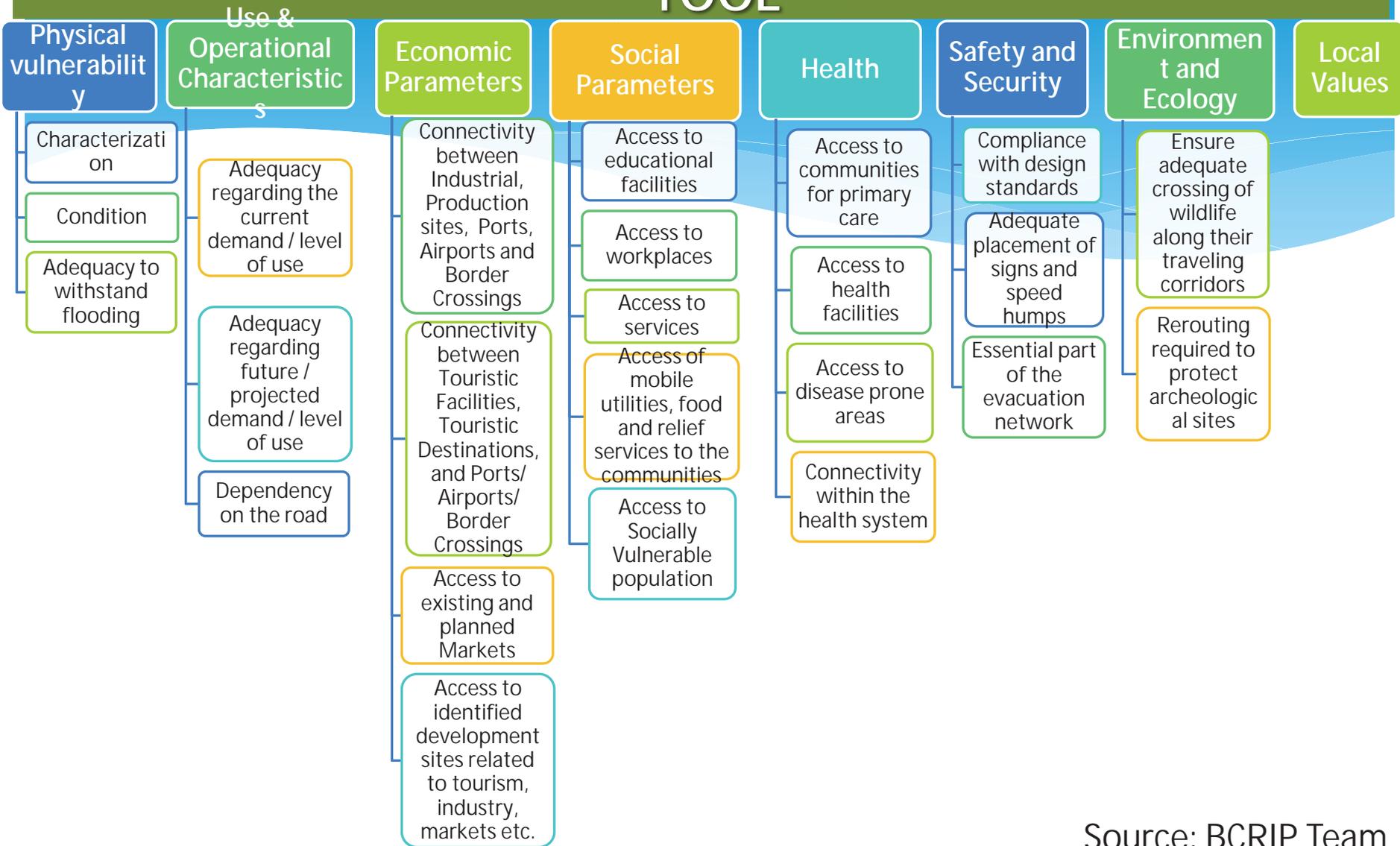
INTEGRATION
HAZARD & CRITICALITY



INFORMED DECISION
MAKING

Source: BCRIP Team

CLIMATE CHANGE ADAPTATION DECISION SUPPORT TOOL



Source: BCRIP Team

To Resilience

The United Nations Framework Convention on Climate Change (UNFCCC) recognizes that Belize is one of those countries most vulnerable to the adverse impacts of climate change due to its geographical and meteorological predisposition.

Robust physical assets, disaster management capacity and risk planning can all contribute to the climate resilience of Belize - its people and economy.