

## **The Disaster-Resilience Analytics and Solutions (D-RAS) KSB**

The D-RAS KSB is a SWAT Team of highly skilled, technical experts whose mission is to troubleshoot disaster risk and resilience challenges encountered by clients internal and external to the World Bank. The D-RAS Team also advises and collaborates with teams to develop tailored and innovative solutions to their specific **disaster risk** and **resilience** challenges.

### ***Disaster Risk Analytics***

The World Bank's Disaster Risk Management (DRM) portfolio of hazard and risk identification and analysis projects incorporates a wide range of natural hazards, including earthquakes, hurricanes, floods and landslides. Under the **CAPRA** (Probabilistic Risk Assessment Program), the World Bank is developing a series of disaster risk profiles for countries in the Latin American and Caribbean region, with an initial focus on Central America. These Country Disaster Risk Profiles (CDRPs) provide estimates of potential economic losses and future risk to property and other asset classes from natural disasters. A CDRP, which is an aggregated level analysis, presents an estimate of risk at the national level.

The objectives of these CDRPs are:

- To further develop the technical capacity of national governments and international development professionals working in disaster risk management by providing critical earthquake and windstorm risks information relevant to their specific regions.
- To produce global methodologies and open exposure datasets based upon population, country-specific building type distribution and other global/economic indicators such as GDP, Produced Capital and fiscal infrastructure value distribution.

CDRP products include:

- Country-level seismic and windstorm probabilistic exceedance loss profiles
- Seismic and windstorm hazard analysis
- Novel and adaptable exposure model

These types of products can be used as the starting point for a policy dialogue on DRM with a country, to raise public awareness of disaster risks, and to provide momentum for the undertaking of more resource intensive, detailed risk assessments for specific financial decision-making or disaster risk reduction (DRR) measures. They can also assist with the development of a framework for financial and fiscal protection strategy.

## ***Resilience Analytics***

In the face of climate change uncertainty, the World Bank is developing and tailoring quantitative decision support methodologies designed to help policy makers identify strategies that satisfy decision makers' objectives whatever the future brings. While traditional analyses begin by asking: "What will the future bring?" Decision Making Under Uncertainty (DMU) methods ask, "What are the strengths and limitations of our strategies, and what can we do to improve them?"

To answer this, DMU methods rest on a simple concept. Rather than using models and data to evaluate plans under a single or handful of scenarios, these methods run models over hundreds of different scenarios – built around changing climate conditions, but also the changing socio-economic conditions that may affect the project's performance. Statistical analyses of these model runs identify the key conditions under which each strategy satisfies or fails to satisfy decision makers' objectives. Visualizations help decision makers understand how robust different strategies are by benchmarking those key conditions against the range of plausible outcomes. They also help compare strategies along other dimensions, such as cost, technical feasibility, and social acceptability.

Importantly, these approaches are not new models. Rather, they use existing data and models transparently, revealing critical assumptions often hidden in analyses and putting decisions back in the hands of decision makers.

DMU methodologies have been applied in the following ways:

- In Peru, these methodologies helped the urban water utility develop a robust investment plan and save nearly 30% of what they had initially budgeted.
- In Colombo, DMU methodologies were applied to evaluate the tradeoffs between protecting wetland areas, crucial for limiting flood losses in the city, and developing them.
- These methodologies were also tested to assess the vulnerability of the road network in Peru, and to assist in choosing between different options to increase its resilience to climate shocks.

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