Tackling risk, resilience, and adaptation — a new scientific approach garnering international attention

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The 2030 deadline is fast approaching for nations to reach their global targets under the United Nations Sustainable Development Goals (SDGs), the Sendai Framework for Disaster Risk Reduction, and the Paris Agreement. Now, more than ever, countries need a simplified roadmap to successful policy outcomes and a way to identify cross-cutting actions that provide a maximum return on investment. Evidence-based approaches must be employed to help nations translate international standards into sure-proof decisions that result in fewer disaster losses, reduced socio-economic vulnerability, and sustainable living conditions for all beings on Earth.

One such approach has recently emerged as a frontrunner in the movement to help countries realize their SDG targets and navigate the complexity of interwoven issues including sustainable economic growth, environmental degradation, poverty and marginalization, increased disaster risk, and climate change, among many others.

Recognized internationally in 2022 during the Global Platform for Disaster Risk Reduction and first-place recipient of the United Nations Sasakawa Award, the Pacific Disaster Center (PDC) has created an advanced scientific program for operationalizing the Sendai Framework and accelerating the SDGs. More than 30 countries are engaged in the program — many from the most disaster-prone, climate-stressed regions of the world. Eleven are queued for completion in 2023, including seven island nations from the Eastern Caribbean as well as Colombia, Suriname, Ghana, Togo, and Benin.

As a University of Hawai'i applied science and research center, PDC developed the National Baseline Assessment program following decades of academic research and scientific collaboration in global disaster risk reduction (DRR). Unlike other assessments operating in the DRR space, PDC's approach is designed to fully operationalize the targets of the Sendai Framework and to provide a scalable and sustainable system for understanding, updating, and applying critical risk information in all areas of decision making and policy development.

For many countries, the National Baseline Assessment program is changing the information management and knowledge-sharing paradigm by building risk intelligence

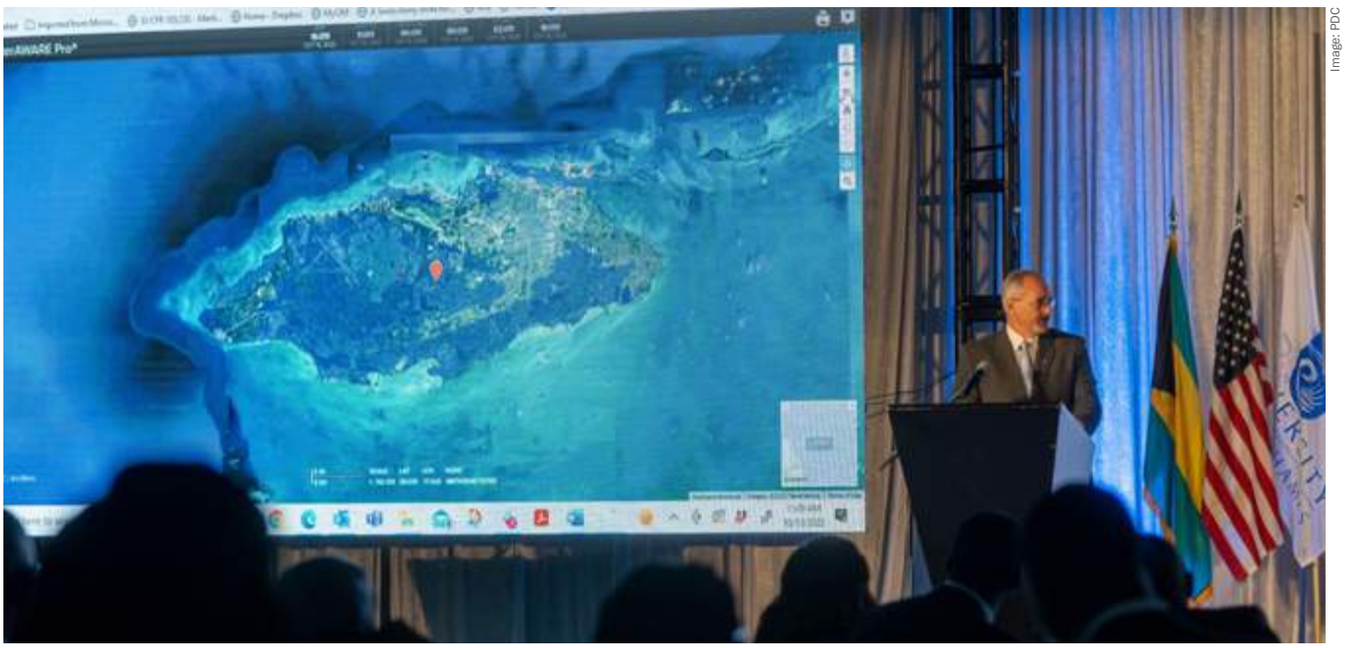
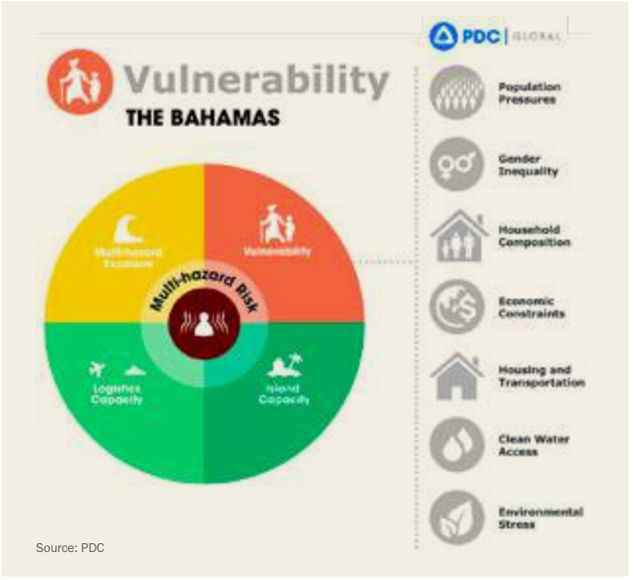


Image: PDC

Results of The Bahamas' National Baseline Assessment were shared during a nationally televised event in 2022 using PDC's DisasterAWARE — a free tool for reducing disaster risk and aiding response, planning, and policy decisions

Image: PDC

Diverse stakeholders from across sectors joined together to complete The Bahamas National Baseline Assessment, culminating in an accelerated plan of action to advance the SDGs, Sendai Framework, and Paris Agreement



Snapshot of PDC's Risk and Vulnerability Assessment framework used by The Bahamas to evaluate multiple dimensions of risk at a national and subnational level

across all sectors of government and civil society. Revolutionizing the older, linear model of assessment in which lengthy reports are read once by policymakers and then forgotten, the new model of sharing multi-dimensional, live assessment information is catalyzing risk-informed humanitarian action and development. It is deepening collaboration between multiple sectors of government and preserving the longevity and usefulness of risk information — making it easy to both access and update over time. Visualized risk information and analytics also have the dual benefit of supporting quick action during disaster response and promoting an evidence base for long-term planning and sustainable development.

The assessment is conducted at a subnational level and in collaboration with national agencies and institutions to facilitate greater understanding among decision makers of localized issues and buy-in for actions to be taken. It also provides a comprehensive analysis of the national disaster management capacity to mitigate disasters and adapt to climate change pressures. Using a country-driven, and inclusive model of engagement, stakeholders come together from civil society, nongovernmental organizations (NGOs), the private sector, academia, and all levels of government to participate in the National Baseline Assessment.

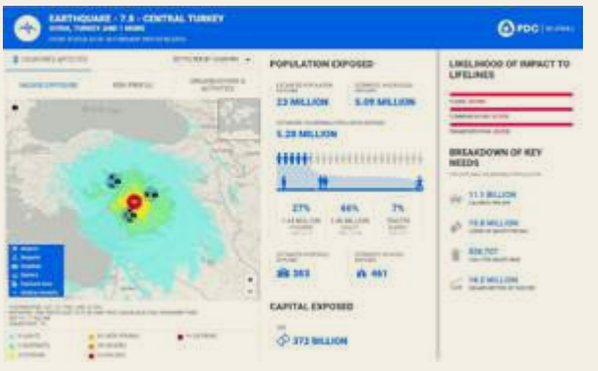
The program has two major components: a Risk and Vulnerability Assessment (RVA) and a Disaster Management Analysis (DMA). The RVA provides a composite index analysis of the drivers of multi-hazard risk including key socio-economic indicators. This improves national and local understanding of the multiple dimensions of risk that contribute to vulnerability and reduced coping capacity. The RVA also evaluates exposure to multiple hazards, providing a snapshot of the current hazard landscape including risk from climate-related hazards such as sea-level rise, drought, flash flooding, mega-cyclones, and other extreme weather events.

Providing further insight, the DMA contextualizes drivers of risk through a holistic examination of the national disaster management apparatus and policy framework. The disaster management analysis ensures more effective prioritization of risk-reduction initiatives and resilience-building by aligning actions to be taken with priority needs. The DMA institutes risk-informed decision making at all levels of government, inclusive of sustainable development and multi-sector cooperation. During the process, numerous intersecting targets of the SDGs, Sendai Framework, and Paris Agreement are identified for action, resulting in a five-year plan designed to reduce pre- and post-disaster risk, improve sustainable development, and support climate change adaptation.

Event Brief

Event Brief improves coordination across the humanitarian spectrum, providing early estimates of exposure and likely humanitarian needs. Using subnational risk and vulnerability data, the early warning report helps decision makers anticipate hazard impacts, increase efficiency in response, and improve the deployment of life-saving aid.

Event Brief has become a global standard for international organizations like the ASEAN Coordinating Centre for Humanitarian Assistance on Disaster Management (AHA Centre), World Food Programme, the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), the International Federation of Red Cross and Red Crescent Societies (IFRC), and other organizations worldwide.



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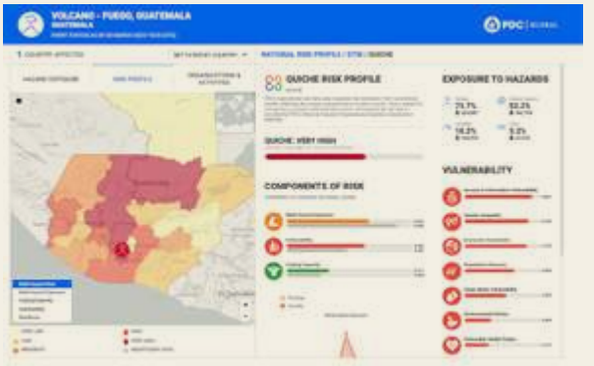

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Above: Since the completion of Guatemala's National Baseline Assessment in 2018, the country has leveraged risk and vulnerability information and critical data for decision making. Recent operational use cases of assessment information include Guatemala's major responses to hurricanes Eta and Iota in 2021, a multi-national preparedness exercise, Continuing Promise, sponsored by US SOUTHCOM in 2022, and recent responses to major volcanic eruptions in 2023 by the extremely dangerous Volcan de Fuego

Beyond the direct benefit to nations who participate in the program, the assessment fills critical gaps in national early warning capabilities and risk knowledge. Critical risk information from the National Baseline Assessment is integrated into PDC's DisasterAWARE platform to provide early warning insights and then shared with the entire global community for disaster response, preparation, and planning. Used by tens of thousands of practitioners, the platform's real-time early warning report, known as Event Brief, leverages assessment data in the estimation of hazard impacts and humanitarian aid likely to be required during a disaster response operation.

According to United Nations Secretary-General António Guterres, nearly one-third of the world's population lacks adequate early warning, particularly in developing and small island nations. Early warning systems are widely regarded as a proven, effective, and feasible climate adaptation measure that save lives and provide a tenfold return on investment.

Below: Philippines national and regional government stakeholders learn how to use a customized national version of DisasterAWARE to assess risk and to receive early warning alerts for 19 types of natural hazard

Image: PDC

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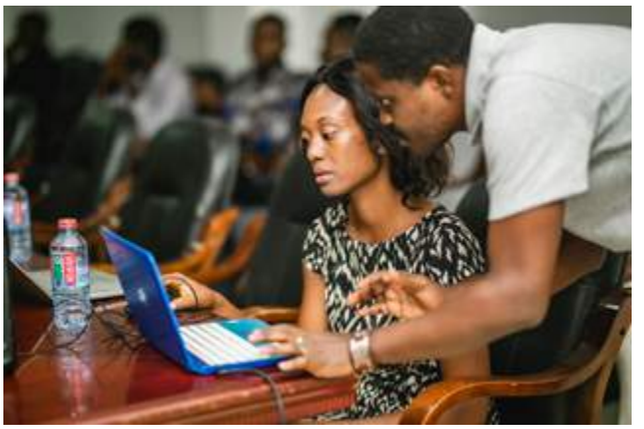

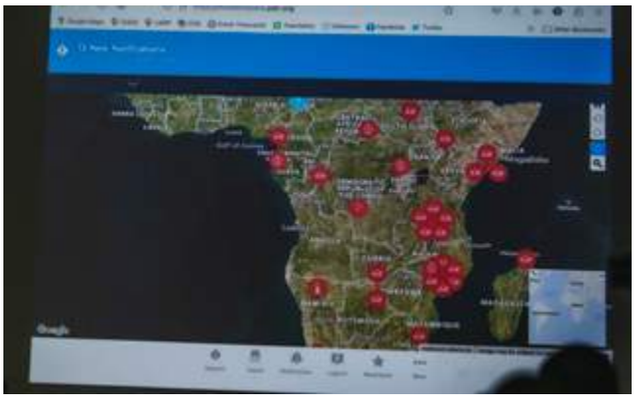

Images: PDC

To help close the early warning gap, PDC's Event Brief, enabled by the Center's powerful all-hazards impact model, anticipates population exposure, impacts to vulnerable populations, critical infrastructure, and potential capital exposure to hazards as soon as a hazard is reported by a scientific authority. The system currently provides global early warning for 19 types of natural hazard. It also offers the only source of global flood and landslide early warning available in the world.

Virtualized assessment information in DisasterAWARE gives NGOs and governmental organizations insight into the key drivers of risk at a subnational level. This allows decision makers to quickly identify where vulnerability is the highest, coping capacity the lowest, and what makes certain geographies more, or less resilient to hazard impacts.

DisasrerAWARE also helps decision makers locate critical infrastructure that may be directly impacted by hazards, and aids planning decisions related to evacuation, shelters, and where to establish safe zones for humanitarian relief workers and supplies. This real-time use of risk and assessment information underpins all decision making for practitioners using the DisasterAWARE system.

The program also supplements national data with PDC's global data catalogue — one of the largest in the world for disaster risk management. With more than 8,000 layers, the Center's expanded data library provides a wealth of scientifically vetted information ranging from population, infrastructure, and real-time hazard data to the Center's latest research on global climate change impacts by 2050, women, peace and security, national fragility, and more.

Beyond its utility in disaster response, easy-to-access, web-based risk information and analytics have strong scientific applications for building resilience to other shocks including global disease outbreaks, ecological diversity loss, overpopulation, resource scarcity, political instability, conflict, and migration, to name a few. Each of these complex issues, which are increasing in frequency and scale, call for more sophisticated tools that can readily inform plans, actions, policies, and investments.

Because climate change will not wait, programmatic recommendations resulting from the National Baseline Assessment are identified by nations for completion within a shortened timeline of one to five years. Leveraging PDC's expertise in DRR, nations are prioritizing actions with the greatest magnitude of impact on the international goals and targets of the Sendai Framework and SDGs. Knowledge gained from the assessment also helps qualify national disaster management capacity and a country's ability to mitigate risk and support adaptation. This provides a contextual basis for the prioritization of accelerated actions that save lives, reduce disaster risks, improve socio-economic vulnerability, and build a more sustainable and safer world for all.

Left: In April 2023, Ghana's National Baseline Assessment kick-off workshop included more than 60 stakeholders from multiple sectors who engaged in an introductory multi-hazard early warning and risk analysis training using PDC's DisasterAWARE platform. The system provides high-resolution all-hazards impact modeling and real-time advanced analytics reports powered by PDC's AI for Humanity technology