Permanent Council – Committee on Hemispheric Security

Expert Meeting on "Protection of Critical Infrastructure in case of Disasters"

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Building Back Better: A Challenge for Critical Infrastructure

By Pablo Gonzalez[i]

PRESENTER'S NOTES

International context and statement of the challenge

The Sendai Framework calls for increasing investments in critical infrastructure –particularly, in schools and hospitals (priority 3), and 'building back better' (priority 4). And SDG 9 of the 2030 Agenda for SD calls for building resilient infrastructure.

Yet, 'building back better' poses a significant challenge, particularly to critical infrastructure, as by definition is the infrastructure that must become operational and functional the soonest. That is the case of ***roads*** and ***bridges***, so as to reestablish access to most affected communities that become isolated and in need of assistance, as well as to ensure access to hospitals;

A case in point is the collapsed of a bridge in Dominican Republic earlier this week.

Last Tuesday, Nov 15th, a bridge collapsed in Dominican Republic leaving several communities isolated in Jamao, in the province of Espaillat, by the rising waters of the Rio Yásica, which brought down the Jamao Bridge that joins the Mocha municipality with the province of Puerto Plata.

The bridge collapsed is the only road, which connects these two communities.

hospitals and ***water systems***, ***energy grids***, and ***tele-communication networks*** and ***schools***. And often, ***ports*** and ***airports***, to ensure delivery of disaster relief and humanitarian assistance, domestic or international.

That urgency often results in rehabilitating or rebuilding damaged infrastructure back worse, not better, which become permanent fixes.

Resilience and Resistance

But increasing the *resilience* of critical infrastructure requires much more than investments to build infrastructure capable to *resist* natural hazards, such as those posed by high winds and intense rain fall produced by tropical storms and hurricanes, or violent earth shakes, high waves produced by tsunami or storm surges, and acid rains or ash falls produced by volcano eruptions. Resilience requires land use planning and risk-based zoning that integrates disaster risk assessments and environmental impact assessments.

Often schools and hospitals are built in low lands or close to river banks, susceptible to flooding, or fragile soils or at the foot of fragile slopes susceptible to landslides. We often see critical infrastructure like hospitals and even emergency operation centers in hazard-prone areas, or in areas where access might be compromised in case of disasters. This occurs even in the presence of land use planning and risk-based zoning, as real estate markets make safe areas unaffordable or donations of hazard-prone land in good will become the site of critical infrastructure.

Good governance: Institutional coordination and collaboration, and data sharing

The development of building codes and application of construction quality assurance (CQA) and construction quality control (CQC) systems, as well as land use planning and risk-based zoning require a high level of coordination and collaboration among institutions so as to share data and information, as well as to implement economic and social policies that warranty that people will not settle in hazard-prone areas and critical infrastructure will be built in compliance of CQA and CQC systems, and that all sectors and infrastructure are resilient in case of disasters.

Another case in point is the one of Saint Lucia.

The National Emergency Management Organization, NEMO, has responsibility for advising the Development Control Authority –which is the agency that guides physical planning, yet NEMO does not have representation in the board of the DCA. Furthermore, there are several Geographic Information Systems spread across various ministries, such as the Ministry for Sustainable Development, Energy, Science and Technology; the Ministry of Infrastructure, Port Services and Transport; and the Ministry of Physical Development, Housing and Urban Renewal, but not a single GIS capable to integrate all data and process it for informing physical and environmental planning integrating disaster risk assessments.

The Caribbean Disaster Emergency Management Agency, CDEMA, and its Comprehensive Disaster Management (CDM) Strategy focuses on Physical and Environmental Planning on its 2014-2023 Implementation Plan. SEDI/DSD chairs the subcommittee on Physical and Environmental Planning of the CDM Strategy.

The failure in one piece of infrastructure may result in a dominos effect compromising the whole system. If shelters are not in place and operational, most likely schools will interrupt their classes to function as shelters. If water systems become disabled, hospitals will not be able to operate; and if roads and bridges are damaged, access to transport injured and people in need of care to hospitals, and bring disaster relief and humanitarian assistance to those most affected communities, will be interrupted.

The same is true for power plants, energy grids and telecommunication networks. So, when assessing the vulnerability of critical infrastructure, systems must be examined in terms of their functions and services, looking at all components and requirements, and taking into consideration that those critical infrastructure become even more vital and under stress during a disaster emergency/

Final Considerations

The challenge for critical infrastructure remains for low income countries as rehabilitated infrastructure may become permanent, with a consequent higher risk for disaster next time, if a well-thought financial plan is not put in place. Furthermore, investments for retrofitting existing infrastructure to upgrade its resilience and for building resilient new infrastructure demand a development vision. How much a state is willing to invest to reduce the vulnerability of critical infrastructure and how much is willing to retain becomes a 'critical' question that can only be answered with a vision for the future, planning and cost-benefit analysis.

The earthquake of February 27 of 2010 in Chile shows, on one hand, the benefits of retrofitting critical infrastructure to avoid higher costs and more complex emergencies in case of disasters. While on the other, it shows that reconstruction, in cases of high magnitude disasters, may boost economies. The decision of investing in retrofitting then becomes a difficult one, and one that must be well embedded in a development plan.

And planning and cost-benefit analysis require a great deal of data, actual and historical. According to the Centre for Research on the Epidemiology of Disasters (CRED) of the Université Catholique de Louvain in Belgium and the World Health Organization Collaborative Centre, economic losses in the high-income countries are around 0.30% of their GDP, while in low-income countries losses can be near to 5.10% of their GDP. In Latin America and the Caribbean the annual losses are estimated to be 1 to 3% of GDP. For example, in 2013, in Saint Vincent and Grenadines disaster costs are about 4.30% of their GDP, in Guatemala 4%, and in Guyana and Jamaica 1.30%. And economic damage estimated is quite limited (only available for 36% of all reported disasters in 2013).

According to the GAR 2015, expected annual losses are now estimated at US$314 billion in the built environment alone, while global average annual loss is estimated to increase up to US$415 billion by 2030 due to investment requirements in urban infrastructure alone. However, according to that report, this growth in expected losses is not inevitable, as annual investments of US$6 billion in appropriate disaster risk management strategies could generate benefits in terms of risk reduction of US$360 billion. This is equivalent to an annual reduction of new and additional expected losses by more than 20 per cent. Such an annual investment in disaster risk reduction represents only 0.1 per cent of the US$6 trillion per year that will have to be invested in infrastructure over the next 15 years. But for many countries, that small additional investment could make a crucial difference in achieving the national and international goals of ending poverty, improving health and education, and ensuring sustainable and equitable growth.

Many countries, including Chile, Peru and many small island developing states (SIDS), would not pass a stress test of their fiscal resilience to a 1-in-100-year loss. And by 2050, in the Caribbean basin, climate change will contribute an additional US$1.4 billion to the expected annual losses from cyclone wind damage alone.

In conclusion, protecting critical infrastructure in case of disasters will require attention to all four priorities for action of the Sendai Framework. There is no doubt investments must be made to retrofit existing infrastructure and build new infrastructure capable to stand the more frequent and damaging disasters. But investment cannot be limited to infrastructure, but also to ensure availability of data and information to formulate policy and make risk-informed decisions; coordination and collaboration among institutions and sectors must be increased and tuned so as to maximize resources and make full use of available information and data, as well as warranty that all pieces of infrastructure are brought to be resilient. And finally, rehabilitation must be planned ahead of disasters so as to build back better, not worse.

[i] Pablo González is the Principal Specialist and Chief of the Program for Disaster Risk Management and Adaptation to Climate Change (RISK-MACC) of the Department of Sustainable Development (DSD) at the Executive Secretariat for Integral Development (SEDI) of the General Secretariat of the Organization of American States (GS/OAS). He has over 25 years of experience in integrated water resources management (IWRM) in transboundary basins and in disaster risk management (DRM), as well as in applied GIS, remote sensing and image processing to natural resources management, with emphasis in conflict (over competitive uses of land and water) resolution. He has spent some time studying the differential roles and conditions of women and men in IWRM and DRM –defined around gender-related social constructions, has a special interest in geopolitical strategies that define relationships among States and joint approaches to sustainable development. He holds a degree in Land Surveying Engineering and a post-graduate degree in Geodetic & Geophysics Engineering from the Universidad de Buenos Aires. He also holds a Master's degree in International Development and Geographic Information Systems (GIS) from Clark University, in Massachusetts. He has served as a volunteer Emergency Medical Technician (EMT) with the Bethesda-Chevy Chase Rescue Squad and the Wheaton Volunteer Rescue Squad, in the State of Maryland.