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Case Study Model in Resilience: Occupational Safety Health and Disaster Response to Flood at Universidad de La Sabana in Chía, Cundinamarca, Colombia, South America

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Introduction

Case studies are an invaluable record of field-based global public health best practices. While case studies cannot provide specific guidance for the management of every natural disaster, they are a record of a natural disaster's impact and subsequent community collaboration which help us to frame questions for the future design of effective disaster risk reduction strategies. Case studies also provide valuable teaching material by demonstrating the real-life situations which may confront the practitioner and sharing evidence of the importance of leadership, determination and resilience of both practitioners and volunteers in the recovery and restoration process.

The "Case Study Model in Resilience" article summarizes the natural disaster that triggered the inundation by flood waters of a Colombian university campus located just north of the Colombia capital of Bogota. The purpose of sharing this timely disaster management case study is to document the immediate corrective steps taken to restore access to the university academic program and the long-term steps taken to ensure that the campus would never again be flooded and that the university would remain "still alive".

The Universidad de La Sabana, located in Chía, Cundinamarca, Colombia, South America, faced one of the biggest challenges in its 30 year university history. As a consequence of an unusually strong winter season, higher than expected water flow in the Bogota River caused the protective dykes to deteriorate and subsequently flood the surrounding area.

The university campus was inundated with muddy, flood water damaging every building on campus as well as the surrounding commercial greenhouses, rose landscape arboretum *(rosa arboreto*) and dairy farms.

The case study reviews and highlights a successful sequence of events linked to the inundation of the Universidad de La Sabana campus and the strategies developed for management of the disaster. The overall resolution of problems related to the flood, university community response, and establishment of formal disaster risk reduction strategic plans are the focus of this case study.

SOURCE: Diana Sánchez. (2011). El Spectador Photo. "No se cancelará semestre en Universidad de La Sabana." (26 APR - 9:15 PM) retrieved from: http://www.elespectador.com/noticias/temadeldia/no-se-cancelara-semestre-u-de-sabana-articulo-265480

Description

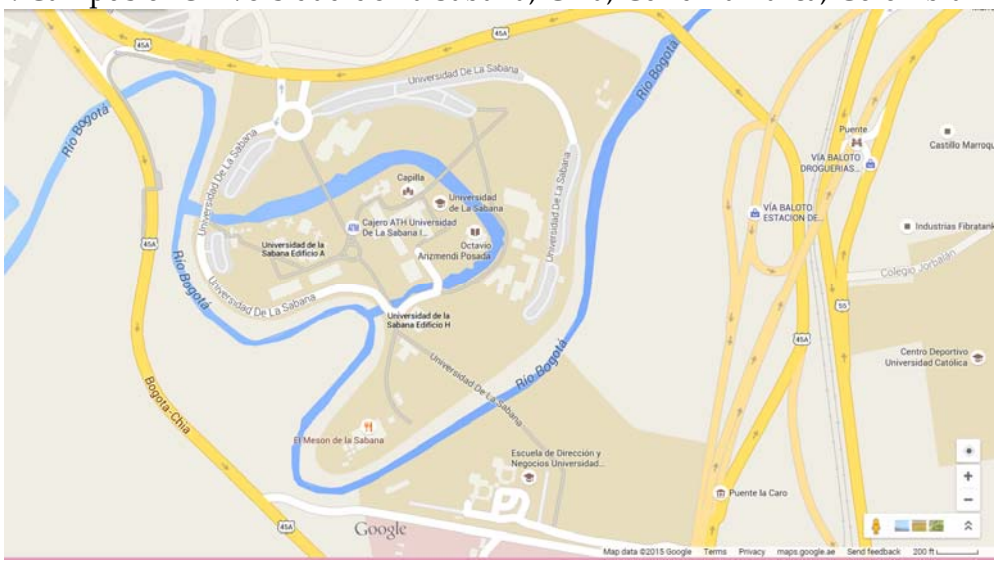
Universidad de La Sabana is located four miles north of the capital city of Colombia, Bogotá. On Monday, April 25, 2011, following Easter Sunday, 500, 000 square meters of water from the Bogotá River flooded the university campus. The muddy flood waters reached a height of 1.70 meters in all buildings on campus, including the pristine lecture halls, historic *casa de pueblito original y capilla* and fully equipped computer laboratories with SMART classrooms. The immediate concerns were health risks and potential biological and chemical contamination impacts on the university campus and surrounding farming communities due to flooding. The next priority related to continuity of Universidad de La Sabana ongoing undergraduate and postgraduate programs.

Discussion

The successful restoration of the Universidad de La Sabana programs within an impressively short timeline is strongly attributed to the university leadership's response to the disaster that ensured

continuity of undergraduate and graduate courses. By 21 May 2011, public utilities and service were restored after the rehabilitation of the dykes around the Bogotá River. Three months after the first flood, 25 July 2011, classes returned to the Common Bridge area of the campus that is on higher ground. The Common Bridge is the historic central portion of the campus located adjacent to the large student parking area on the north side of the campus. In accordance with the wishes of the family who donated their farm land for the Universidad de La Sabana campus, the original buildings and structures, including their family capella chapel, were renovated and actively used as classrooms and offices.

Figure 1. Campus of Universidad de La Sabana, Chía, Cundinamarca, Colombia



SOURCE: http://www.unisabana.edu.co/unisabana/bienvenidos-estudiantes-clase-2015-1/secciones/mapa-de-ubicacion/

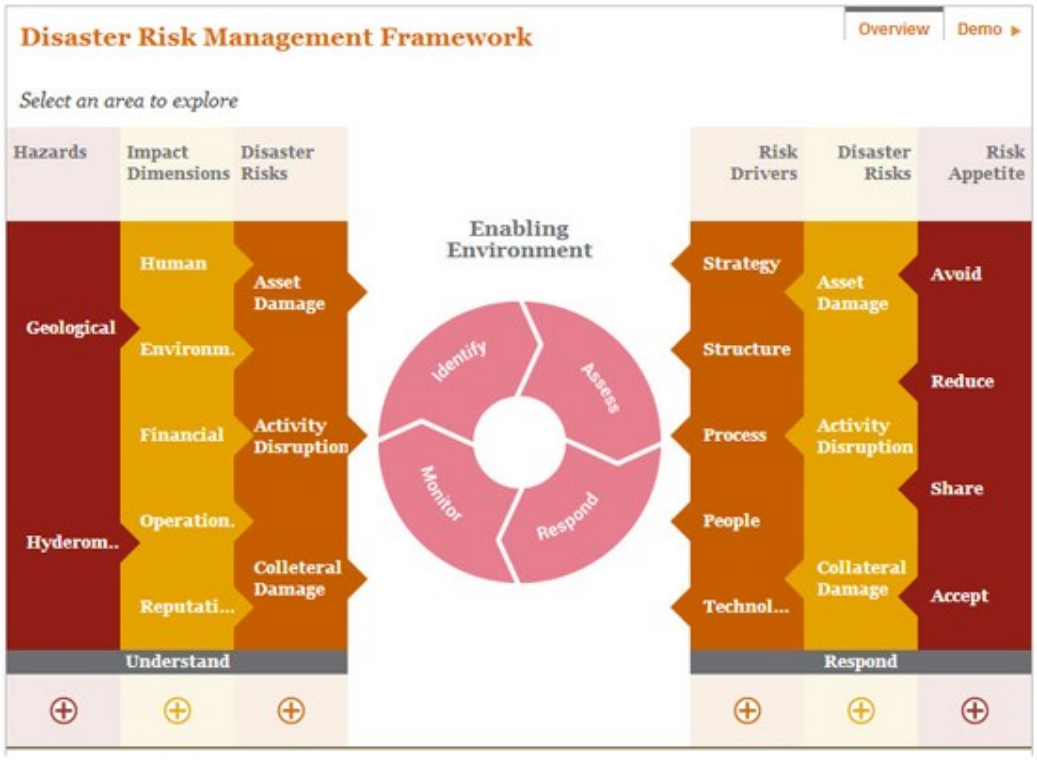
The overall response was guided by a single principle: "La Sabana Won't Stop." Issues of importance addressed immediately by the university leadership related to:

- Reestablishment of Academic Normalcy
- Campus Recovery
- Innovative Renovation
- Continuity of University Reputation

The case study report outlines guidelines and disaster response implications for all stakeholders as the university implemented a multi-phase Disaster Response, Recovery and Reconstruction plan.

Phase 1: The first phase of the university disaster management initiative focused on the reestablishment of academic normalcy. Community support and humanitarian assistance was so swift that the normal academic functioning was quickly restored. Academic course delivery was successfully completed by re-establishing communication channels through Virtual Sabana and facilitated via internet by La Sabana Information, Communications and Technologies (ICT) team. Traditional classroom courses were adapted temporarily to correspondence courses via email with ICT making learning resources accessible using the university website and

online library. Science courses requiring laboratories were temporarily conducted at Universidad Nacional de Colombia, top university in the country for science, medicine and engineering. However, students were made responsible for accessing assignments and learning



Building a global public-private platform for disaster resilience

In response, PwC has been collaborating with the United Nations, under the auspices of its International Strategy for Disaster Reduction (UNISDR), in an initiative focused on creating a sustainable, private-public disaster risk management platform, with the ultimate goal of creating risk-resilient societies.

This report provides an in-depth look at this critical initiative—along with insights on the disaster risk management approaches and experiences gathered from leading global businesses. It identifies challenges that are constraining efforts to build collaborative resilience, and proven practices that have been used to tackle these challenges.

resources using the university website. University postgraduate courses that were previously delivered online as Self-Directed Learning modules were uninterrupted. The university leadership had the foresight to replicate online resources, student records and all administrative records at an off campus location, known as VISIÓN in Bogotá, at the La Sabana Consultancy Centre. The Consultancy Centre also houses the university administrative offices and serves as an alternative location for archived university records in electronic format. Time sequence of events:

- Within three days following the flood, Cruz Roja Colombiana (La Sociedad Nacional de la Cruz Roja Colombiana, Colombian

National Society for Red Cross) teams completed boat rescue missions;
- Within the first ten days following the flood, *university classes resumed off-site at alternate locations;*
- Within two weeks following the flood, *extensive use was made of Virtual Sabana for online course delivery*;
- Within one month following the flood, the Bogotá River waters receded (21 May 2011);
- Within three months following the flood, classes resumed on campus (25 July 2011).

Phase 2: The second phase disaster management priority was the restructuring of academic schedules in a way that was compatible with university weekly schedules and previously established academic calendars. The Campus Recovery was primarily accomplished by finding alternative locations for the conduct of traditional on campus courses. Through skilled planning and coordination, all university courses were conducted by the original professors with classes convened in sites on higher ground in the surrounding community. There was substantial support offered, including make-shift classrooms in small hotels in northern Bogotá, the adjacent military academy.

There was a tremendous humanitarian outreach and community support resulting in multiple venues for use as alternative classrooms; this was largely due to the university's strong relationships within the surrounding communities. Small hotels adjacent to the campus, secondary-level academies, the Catholic seminary and Universidad Nacional de Colombia offered space free of charge for temporary classrooms within days of the Universidad de La Sabana campus flood. Although Universidad Nacional de Colombia is in central Bogotá, it was fortunate that they opened their doors for temporary use of lecture halls and meeting rooms.

Assignment of alternative locations was based on the central principle: "La

Sabana Won't Stop." Four formal alternative venues were established, including short term use of hotels near Forum Calle 80 and longer term sharing of classrooms Catholic University near La Caro and Universidad Agustiniana as well as La Sabana Hospital (Clinica La Sabana).

Phase 3: The third phase related to the accomplishment of the university renovation and renewal. The university leadership and volunteers suggested innovative solutions and ideas. Academic course delivery required redesign based on traditional pedagogical standards and strategies because most university courses were traditional classroom courses without audiovisual technologies or connection to Virtual Sabana WiFi, Most courses were in traditional classroom lecture format with LCD presentations and SMART boards.

Innovation was needed to meet to the logistical challenge of providing learning materials and library resources to professors and students after assignment of alternative classroom locations. Based on the principle: "La Sabana Won't Stop.", the university re-established permanent ICT network communication between the professors, students and their parents relying on a Social Networking platform.

Additionally, the solidarity of the university community highlighted institutional values and commitment to continuity of public services through the La Sabana Clinic which is located adjacent to the campus on higher ground. An interdisciplinary team took charge of epidemiological vigilance and decision-making to prevent and control biological, chemical, and environmental risk following international guidelines.

Actions taken:

1. Identification of biological and chemical hazards and psychological risks
2. Building disinfection.
3. Disposal of contaminated materials
4. Cleaning and disinfection of equipment and electronic materials
5. Vector Control
6. Waste management
7. Occupational safety focused on adequate personal protective equipment
8. Vaccination campaign
9. Nursing attention point at the University Central Command

Furthermore, the university provided outreach and psychological support to faculty, staff, and students. The flood caused a crisis of confidence that impacted the entire university community. Psychological outreach resources included Crisis Intervention and Group Interventions.

Phase 4: The fourth phase related to the Continuity of Reputation. The speed at which this exceptional university resumed regular course offerings, activities and events was nothing short of remarkable. As a consequence, La Sabana retained the status as one of the leading universities in Colombia. The university restructuring required due to the flood allowed for the development of many more online courses offered through Virtual Sabana. As a consequence, La Sabana gained additional status as one of the best universities for online postgraduate degree programs.

Finally, the university rallied continuous support through extended communication efforts via all types of media and international collaboration. Universidad de La Sabana's recovery and reconstruction focused on building back safer and stronger. The university received

funding for the construction of a new dam encircling the campus through an international consultancy with the Netherlands. This action offered definitive protection for the prevention of future campus floods.

Conclusion

Dr. Obdulio Velásquez Posada, Rector, Universidad de La Sabana, following the successful university recovery, reconstruction and renewal, called 2011 a year that "marked the path to change". An evaluation of specific emergency response needs and appropriate disaster management was expedited by open, flexible innovation that was guided by the central principle: "La Sabana Won't Stop" to be successful. The outpouring of humanitarian aid and material support for the university was published in the local, national and international news and journals reporting, "No semester will be canceled in the Universidad de La Sabana. We can guarantee that the semester will not be canceled and that although the campus is flooded, **the university is still alive**."

The university leadership and the successful decisions by administration improved the visibility, recognition and appreciation of the La Sabana as a leading academic institution in Colombia. A negative experience was turned into an opportunity to "Rethink the University" and promote innovative academic and administrative processes, including new systems for electronic messaging and virtual course delivery ('Comunicación Digital'). The university is stronger than ever due to multidisciplinary team building that encouraged cooperation, collaboration, innovative action planning, and "hands on" professional development. The adoption of the institutional value, "La Sabana Won't Stop," created solidarity and direction with the university community. This sense of solidarity allowed more than 10,000 people to mobilize towards a common purpose and move forward despite adversity.

In conclusion, specific outcomes in the subsequent years dramatically changed the Universidad de La Sabana outlook and commitment to supporting the surrounding farming community. The university learned many lessons following the inundation of the campus, including their stronger commitment of thinking "first" of the surrounding rural communities before considering potential changes at the campus. Currently, the university administrators and faculty have an interdependent sensitivity and stronger bond with pueblitos of Cundinamarca, including the main campus in Chía.

Recommendations

Universidad de La Sabana case study serves as an excellent model for resilience by highlighting successful team building and steadfast innovation in disaster management. As a consequence of the flood disaster, the university learned many lessons about prevention of information loss by reorganizing and updating to Technologies 2.0 for External Data Center offsite. In addition, La Sabana continues to invest in future risk reduction through Virtual Sabana's commitment to the Sabana Cloud, new emphasis increasing the university capacity to teach with online formats or conduct classroom/laboratory sessions in alternative locations, such as Mobile Classrooms, community venues, and other academic institutions. Many

positive changes occurred as a consequence of mutual support, multidisciplinary resilience through strengthening of existing Social Networks.

The fact that Universidad de La Sabana was tested by the flooding disaster and is still 'alive' demonstrates that the university is a socially responsible institution with heart. Overall, the university has been "built back better" with a new sense of accomplishment as a consequence of strengthening multidisciplinary accomplishments between faculties.

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