# Platform

The University of Texas at Austin :: School of Architecture :: Winter 2008-09 Community and Regional Planning :: Learning By Doing



# **Risk and Vulnerability Assessment :: Santo Domingo, Dominican Republic**

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In the spring semester of 2008, students in the CRP course Applied Geographic Information Systems (GIS) conducted a participatory study of risk and vulnerability associated with a flood-prone informal urban settlement in the Dominican Republic. The course was part of a new research and service-learning relationship between the city of Santo Domingo Norte, the UT Austin School of Architecture, and the Universidad Autónoma de Santo Domingo (UASD), initiated in summer 2007 by Dr. Kent Butler and CRP student Kelly Schaun, with the collaboration



of faculty in the LBJ School of Public Affairs, the Departments of Geography and Anthropology, and the Institute of Latin American Studies. The intent of the partnership is to provide technical assistance to planning institutions in Santo Domingo and opportunities for learning and field research to students concerned with development planning in Latin America.

The course project took place in Los Platanitos, an informal housing settlement located on a lowlying former landfill in the municipality of Santo Domingo Norte (SDN). Following a series of meetings with community leaders in Los Platanitos, urban development agencies, and NGOs (non-governmental organizations) in the Dominican Republic, Dr. Bjorn Sletto developed a pilot project to document the social and health implications of a drainage ditch, also known as a *cañada*, which runs through the community. The cañada was at one time a natural creek, but in recent years has been lined with concrete and, in places, covered with a cement cap. Because of inadequate sewage and solid waste management, the former creek is now severely contaminated with garbage and blackwater. When it rains, water laced with sewage and chemicals floods the houses that line the *cañada*, leading to high levels of gastrointestinal disorders and respiratory diseases.



The students enrolled in the course began preparing in November 2007 for the first of two trips to Santo Domingo in January 2008. The class drew on the theoretical framework of political ecology and developed a blend of research methods, including participatory mapping, architectural surveys, and ethnography to document the flooding problem in Los Platanitos. Students were organized into three teams—physical survey and ethnography, GIS and mapping, and social documentation—each working at a different scale and with different types of data to develop a comprehensive analysis of the challenges confronting the community.

The physical survey and ethnography team focused on the material and cultural landscape of the 1-kilometer-long cañada itself. They meticulously documented the physical environment, including measuring channel depth and width and all the buildings lining the channel; systematically photographing every

structure. This group also conducted interviews with residents who live on the banks of the cañada. The survey drawings were transferred into maps and diagrams using AutoCAD, ArcGIS, and PhotoShop, and used in participatory workshops where community members identified areas of solid waste buildup and flooding, places where children play, and unsafe locations. The interviews were transcribed, translated, and used in a poster and a final report to better describe the history and culture of the community.

The GIS mapping team worked on a larger, regional scale to better understand the context of the flooding and solid waste problem. Their goal was to draw on local knowledge to identify locations that are important for everyday life in the community, such as businesses, residences, and public places, but also features relevant for the flooding problem, such as the locations of storm drains. The GIS team also mapped important hydrological features in the watershed

upstream from the cañada and documented the development of impermeable surfaces around the community. This research showed that the accumulation of solid waste and flooding in Los Platanitos are, in large part, consequences of uncontrolled urban growth in areas outside the neighborhood.

The social documentation team conducted a detailed randomsample survey to gather data on the demographic, economic, and environmental vulnerability factors in the neighborhood. The team also conducted focus groups related to problem-ranking, wellbeing indicators, and children's perception of the environment. Survey results indicated that more than half of Los Platanitos residents have lived in the community for over a decade, with many of those reporting a length of residence over sixteen years.







With preliminary findings in hand, the students returned to Santo Domingo during spring break to present maps, posters, and an initial report to the residents of Los Platanitos, representatives of the municipality, scholars from UASD, and NGOs engaged in the project. Additional fieldwork was conducted to fine-tune and complement the initial findings, and a roundtable discussion was held with the various actors to foster an open dialogue about the problems facing the cañada. The roundtable discussion was a vital step in integrating the research findings, community concerns, and the perspectives of the municipality and the NGOs into a cohesive framework that could be applied to improve conditions in Los Platanitos and other cañadas. In conjunction with the roundtable discussion, students facilitated a community visioning workshop to develop a community-based plan for social and environmental improvements in Los Platanitos.

The final class products included 2D and 3D GIS maps, architectural drawings of the cañada and the built environment, posters, photography, and life stories, which combined to paint a profound picture of the social and environmental conditions in Los Platanitos. Based on the joint efforts of the students and their local partners, the final class report also includes specific recommendations to address the environmental and social challenges facing the community. A documentary filmmaker from the Department of Anthropology,

Ph.D. student Maryam Kashani, also joined the students for both fieldwork sessions and to produce a film about the project.

This open, unprecedented dialogue between residents of Los Platanitos, city officials, and NGO representatives was one of most important achievements of the class project. The students also created for the partners a valuable model for rapid assessment of *cañadas* that is being implemented throughout Santo Domingo, and the City of Santo Domingo Norte is developing infrastructure projects to address the serious conditions in Los

Platanitos. However, the project was more than a technical exercise—it was also an opportunity to demonstrate the enthusiasm and talent of the CRP program in a real-world setting. Developing and implementing multi-disciplinary research methods in a limited time-frame was a challenging and invaluable learning experience for the students that will help them prepare for professional careers in development and international planning. Students were also able to participate in efforts to resolve a complicated planning issue and witness the very real ramifications of environmental risk.



Images 1. Children were enthusiastic and knowledgeable participants in the mapping process.

2. Los Platanitos contains a range of housing types and demographic groups.

3. The student researchers documented the vibrant life of the community through photography.

4. AutoCAD renderings of the cañada and other parts of the community were created by the student researchers

5. The risk of flooding and other hazards continually endangers all members of the community.

6. Students at a local elementary school wait for class to begin.

7. Residents play dominoes at one of the many active street corners in the community.

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