

At the mercy of the earth: more than one third of Puerto Ricans live in areas highly susceptible to landslides ^[1]

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The research points out that the number of people living in areas of high or higher susceptibility may be underestimated (Josian Bruno).

A study involving researchers from the UPR's Utuado and Mayagüez campuses identified, for the first time, the communities most at risk from landslides based on social factors.

Utuado - Six years ago, when the agony of Hurricane Maria's winds and downpours came to an end, José Triburcio Pérez Pagán was one of the thousands of Puerto Ricans who had no time to wait for government authorities to restore some degree of normalcy to their daily routine.

The reason in his case was his wife, Luz Nereida Ledesma, a dialysis patient due to her kidney condition. The problem? The bridge that crosses the Limón riverbed collapsed during the cyclone due to landslides, preventing passage to and from the Tetuán neighborhood, one of this town's most difficult to access sectors.

"There was no (bridge). People donated, some had materials, and others had a couple of dollars. We made the bridge with 2,300 dollars," said Pérez Pagán, who turns 75 this Sunday. Hurricane María crossed Puerto Rico on Wednesday and "by Saturday it was already passing (over the bridge)," the man said.

Ledesma died two years ago of causes unrelated to her kidney problems. However, the odyssey experienced in the days following María illustrates the vulnerabilities faced by a high proportion of the Puerto Rican population to the incidence of landslides, a reality that, although it mainly affects remote sectors in the central region of the country, such as the Tetuán neighborhood, has a much broader scope.

"The problem we have is that that road is the only way out. When the trees start falling down, that's landslides. If we sit and wait for the municipality's machines to come, we can't. In the community, we put our hands to the job and do what we can. That's why we take our time with axes and shovels to clear the roads", said Tomás González, who depends on the roads to transport the agricultural products -such as coffee and bananas- that he grows in the La Catalana sector, one of the highest parts of the Tetuán neighborhood.

"Where we are it is not easy to live": communities in Utuado remain under threat of landslides

The 75-year-old man recalled that, after Hurricane María, it took about six months to rehabilitate the vehicular access road to the sector. During that time, it was necessary to fetch water and gasoline on foot.

A daily risk

The rainfall and winds recorded during the most destructive hurricane in Puerto Rico's modern era resulted in more than 70,000 landslides in the mountainous area.

The data is contained in the study "Evaluating Social Vulnerability to Landslides in Rural Puerto Rico," a collaboration between the Utuado and Mayagüez campuses of the University of Puerto Rico (UPR) and the University of Colorado, which analyzes in an integrated manner the geological and social characteristics in all regions of the country.

As a result, the research developed the first landslide susceptibility index that incorporates social variables into the calculation of risk faced by Puerto Rican communities.

"When we say we are looking at social factors, we are looking at social vulnerability, which is the set of demographic, social, cultural, and geographic characteristics. That set of social and environmental factors that affect the level of risk a person faces in the wake of a hazard. In the case of landslides, (the risk) is not only that a landslide occurs on my land, but also that the road that provides access to my house is in a highly susceptible area, or how that prevents me from accessing services," explained Luis Alexis Rodríguez Cruz, an expert in agri-food systems and researcher at the UPR in Utuado.

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