



## **Territory management an appropriate approach for taking into account dynamic risks**

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The territorial approach in risk analysis is well established in scientific communications in recent years, especially in the francophone literature. It is an especially appropriate approach for exploring a large number of criteria and factors influencing, on the territory, the composition of the vulnerabilities and risks. In these sense, this approach is appropriate to identify not only risks due to natural hazards but also social and environmental risks. Our case study explores the catastrophic landslide, a collapse of 6 millions cubic meters of rock in Los Chorros, in the municipality of San Cristobal Verapaz-Guatemala, in January 2009. We demonstrate that the same natural hazard has different consequences within this territory and may also increase or even create new vulnerabilities and risks for the population. The analysis shows that the same event can endanger various aspects of the territory: resources, functions (agriculture, or houses uses for example) and allocations and highlights the different types of vulnerabilities that land users (i.e. farmers, merchants transport drivers) face. To resolve a post-disaster situation, the actors choose one vulnerability among a set of vulnerabilities (in a multi-vulnerability context) and with this choice they define their own acceptable risk limits. To give an example, the transport driver choose to reduce the economic vulnerability when going to the local market and crossing the landslide (physical vulnerability). In the context of a developing country with weak development and limited resources, land users that become the Risk managers after the disaster are compelled to prioritize between different actions for reducing risks This study provides a novel approach to risk management by adding a political science and geography dimension through the territory approach for improving our understanding of multi-hazard and multi-risk management.

Based on findings from this case study, this work asserts that risk is not unequivocal. On the contrary, in the case of the Los Chorros, the “primary” risk (the landslide), as evaluated by the authorities, was not perceived as such by the local community, which prioritized economic risks by creating their own road through the landslide area in defiance of authorities. In other words, certain attributes and characteristics of risk will be emphasized by some actors over others, (i.e. economic considerations over the perceived probability of another landslide). Their priorities will depend on their needs and mandates and as priorities change, so individual definitions of risk may change over time.

This paper demonstrates that the risk is not uniform, that multiple risks persist especially in a developing country context becomes diffuse, changes or endures because it depends on the implications on the territory and on the risk definition made by the actors. The risk is variable, the result of a choice because its existence is attributed by the characteristics or criteria of vulnerability fostered by actors in their territories.

Finally, the case study demonstrates that in developing countries, actors are forced to address and prioritize multiple risks due to limited resources. In this context, the challenge for managers of natural hazards is to move from risk management in the strict sense (i.e. pure hazard approach) to a broader risk management, taking into consideration what is important for the society and for the functioning of systems. Territory management in this sense is an appropriate approach for taking into account multiple stakeholder priorities, their relationships, available resources and limitations.