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Structural and Non-structural measures to control debris flows at Riegersbach catchment, Austria

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On Aug 30th 2005 a landslide with a cubature of almost 650.000 cubic meters occurred in a tributary of the river Auenbach (Wolfsberg - Austria). On the lower end of this landslide, at the transition to a steeper slope a debris flow was triggered and stopped 700 meters downstream, approxiamtely 300 meters upstream of the confluence with the Auenbach. Geologists estimated a possible volume of further debris flows of 15.000 cubic meters minimum. The expected debris flows endanger the infrastructure of the valley Auenbach, especially the single road, that will be at risk for being destroyed - at least partly - if the currently resting debris flow starts flowing again. First of all it was essential for the local stakeholders to monitor the debris flow activity. First inspections by man within the interval of twelve hours were considered as an appropriate solution. Since this system could not provide a continuous monitoring, a self-acting system was developed by the Institute of Mountain Risk Engineering - BOKU-Vienna. This system provides automatically alarms to the responsible community via GSM and switches on a red traffic light, which is especially installed on the single road. For this purpose eight piles were positioned in distances of about two meters across the resting debris flow. A wire connects every single pile with one switch hanging above. By movement of the pile the switch gives signal to the data collector. If two or more piles start moving due to active debris flow, the data collector will enable the community as well as the traffic light. Thus the monitoring system ensures both, to protect people against getting harmed by the debris flow and to brief local responsibilities on the current incidence to take further measures. At the same time the design of structural measures started, including drainage work in the lower end of the landslide and an open check dam (sectional barrier) 200 meters upstream the single road with an estimated deposition volume of 25.000 cubic meters. These active and

structural measures should displace the passive and non-structural measures within the next three years.