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Dimension Stone Quarries Risk Assessment Estremoz Marbles

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Advances in Natural Hazards and Volcanic Risks: Shaping a Sustainable Future

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Abstract

For centuries, dimension stone marble exploitation from the Estremoz Anticline, south Portugal, leads to a peculiar landscape consisting of hundreds of deep open-pit quarries.

In the 80s of the last century, more than 180 quarries operate side-by-side simultaneously. The struggle for interesting outcrops, in addition to private property that legally characterises the mineral masses in Portugal, led to a situation where the quarries very close to each other developed into a well and independently. As the quarries reached greater depths, in several cases over 100 m, issues related to the slope stability became more evident and dangerous. It took an accident that caused 5 deaths due to a slope collapse that destroyed a municipal road for public entities to pay more attention to this issue. Within the scope of the Intervention Plan in Quarries Under Critical Situations (2019–2021), approved at the meeting of the Council of Ministers on February 7 (RCM 50/2019), the University of Évora carried out 34 slope stability studies in approximately 40 exploitation cavities for ornamental marble. This work summarises the identified main situations and the measures recommended for their mitigation.

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