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Dam's rating in seismic risk classess in the North-Eastern part of Romania

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The main goal of this paper is rating all dams from the North - Eastern part of Romania into seismic risk classes. Dam owners and regulators must ensure that dams are safely operated and present no risk to the public in case of an earthquake. While most old or new dams in recognized seismic regions have been evaluated and analyzed for seismic loads, dams located in areas of moderate or infrequent seismicity have been given less systematic attention. In such cases, owners of many dams or officials in charge of dam safety programs may consider comparative assessment of the seismic risk associated with their dams and establish priorities, as needed. Risk classes can be used to establish the necessity of detailed assessment of seismic safety of the dams and to establish the priorities of these evaluations.

Methodology which is used in this paper offers an easy way to evaluate the most vulnerable hydrotechnical facilities among the multitude of the North-Eastern part of Romanian dams, that are affected by normal and intermediate-depth Vrancea earthquakes and crustal earthquakes from Barlad and PreDobrogean Depression. The risk is expressed as a product between hazard and vulnerability. In particular, seismic risk in the case of hydrotechnical arrangements is computed as a product between seismic hazard (corresponding to the location of the respective hydrotechnical arrangement) and the seismic vulnerability of the respective arrangement. Various risk factors and weighting points can be used to approximately quantify the Total Risk Factor (TRF) of any dam [Bureau and Ballentine, 2002]. The TRF depends on the dam type, age, size, the downstream risk potential, and the dam vulnerability, which depends on the seismic hazard of the site. The dam structure influence is represented by the sum of capacity, height, and age risk factors. The downstream hazard factor is based on population and property at risk.